



PACIFICORP DEMAND-SIDE RESOURCE POTENTIAL ASSESSMENT FOR 2015-2034

Volume 4H: Appendix H to Class 2 DSM Analysis – Measure Assumptions

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Class 2 Measure Data and Assumptions

Appendix H is a comprehensive list of the measures considered for the Class 2 potential analysis. For each measure, the following information is provided:

- **Segment:** Relevant market segment, building type, or facility type. Relevant options are listed in Appendix A.
- **End Use:** Category of end-use equipment to which measure savings apply. Relevant options are listed in Appendix A.
- **Measure Name:** Technical description of the measure, including measure efficiency.
- **Unit Description:** Units for savings and incremental costs.
- **Construction Vintage:** New or existing construction.
- **Average Savings per Unit (Annual kWh @meter):** First-year kWh savings at the customer meter.
- **Measure Life:** Expected life of measure in years.
- **Average Incremental Cost Per Unit:** Includes incremental equipment, labor, and present value O&M costs.
- **Base Year Saturation:** Percentage of units (homes, building, equipment, etc.) that have already installed or received the measure.
- **Applicability:** Percentage of units (homes, buildings, equipment, etc.) that can receive the measure. Accounts for technical limitations of installing the measure. The available market is Applicability minus Base Year Saturation.
- **Levelized Cost:** Cost (\$) per kWh saved at the generator or system level. This value is given in terms of the total resource cost (TRC) for all states except for Utah, where it is given in terms of the utility cost (UCT) per regulatory preferences.
- **Cumulative Achievable Technical Potential in 2034:** Represents cumulative annual energy savings in 2034 at the generator or system level. This value accounts for the impact of standards, in years after standards go into effect and is consistent with totals presented in Volume 2.
- **20-Year Incremental Achievable Technical Potential:** Represents the sum of 20-year incremental savings at the generator or system level. This value is consistent with what PacifiCorp used for IRP modeling.

Residential Measures

California Residential Measure Assumptions

Table H-1 Table of California Residential Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	179.34	14	\$306.84	94%	at stock turnover	\$0.21	175	179	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	14.60	14	\$49.70	96%	at stock turnover	\$0.42	42	41	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	8.90	15	\$6.92	68%	at stock turnover	\$0.09	28	26	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	744.77	5	\$103.00	0%	7%	\$0.02	103	132	PacifiCorp Program Data
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	91.80	21	\$12.44	52%	at stock turnover	\$0.01	40	42	Developed from RTF "ResFreezer" v2.2 (11/2012)
Manufactured Home	Appliances	Microwave - Efficient	Installation	Existing	8.52	15	\$88.95	99%	at stock turnover	\$1.25	16	16	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	117.95	17	\$71.90	100%	at stock turnover	\$0.07	56	60	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	989.04	7	\$103.00	0%	60%	\$0.01	586	653	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	226.93	17	\$76.00	21%	at stock turnover	\$0.04	53	54	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	Existing	1.54	17	\$112.36	87%	at stock turnover	\$8.20	2	2	DOE Report
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	179.34	14	\$306.84	94%	at stock turnover	\$0.21	41	40	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	New	14.60	14	\$49.70	96%	at stock turnover	\$0.42	9	9	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	8.90	15	\$6.92	82%	at stock turnover	\$0.09	7	6	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	New	574.21	5	\$103.00	0%	7%	\$0.02	15	15	PacifiCorp Program Data
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	91.80	21	\$12.44	57%	at stock turnover	\$0.01	10	10	Developed from RTF "ResFreezer" v2.2 (11/2012)
Manufactured Home	Appliances	Microwave - Efficient	Installation	New	8.52	15	\$88.95	99%	at stock turnover	\$1.25	4	4	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	117.95	17	\$71.90	100%	at stock turnover	\$0.07	13	14	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	735.17	7	\$103.00	0%	60%	\$0.02	67	69	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	226.93	17	\$76.00	21%	at stock turnover	\$0.04	13	13	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	New	1.54	17	\$112.36	87%	at stock turnover	\$8.20	1	1	DOE Report
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	176.38	14	\$1,070.43	9%	at stock turnover	\$0.13	83	82	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	58.59	5	\$500.00	15%	40%	\$1.41	23	32	Hawaii TRM
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	Existing	98.61	10	\$295.58	40%	75%	\$0.35	63	77	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	87.43	2	\$175.00	7%	75%	\$0.75	22	30	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	115.01	14	\$332.93	10%	at stock turnover	\$0.36	59	48	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	0.00	14	-\$167.13	16%	at stock turnover	\$10.00	0	0	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	Existing	141.51	15	\$1,084.14	15%	75%	\$0.66	145	188	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	8.27	20	\$182.30	2%	80%	\$0.12	13	15	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	75.43	18	\$497.62	29%	75%	\$0.07	38	42	Developed from RTF "ResSFDDuctSealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	107.90	15	\$3,913.00	0%	75%	\$0.19	42	20	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	57.71	20	\$706.22	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	Existing	56.81	10	\$275.00	15%	25%	\$0.06	12	13	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	3.05	25	\$313.97	66%	75%	\$0.15	1	1	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-30	Installation	Existing	35.77	25	\$732.60	19%	75%	\$0.14	42	46	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	Existing	47.52	20	\$640.82	48%	60%	\$0.21	6	7	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	Existing	70.25	25	\$872.14	36%	60%	\$0.15	34	38	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	Existing	18.13	25	\$1,045.87	15%	75%	\$0.31	20	26	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,478.37	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$2,940.47	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	Existing	200.80	12	\$206.81	5%	at stock turnover	\$0.14	5	5	BEST Simulation
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	Existing	116.66	8	\$49.00	0%	50%	\$0.07	14	15	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	Existing	58.02	5	\$698.88	15%	40%	\$1.97	23	32	PG&E Document "PGECHVC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	290.64	25	\$737.81	7%	75%	\$0.28	396	451	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	136.44	20	\$974.29	15%	75%	\$0.57	146	193	DEER
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	25.58	25	\$4,558.10	15%	75%	\$0.34	5	5	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	178.82	14	\$1,011.70	9%	at stock turnover	\$0.20	21	21	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	54.88	5	\$500.00	15%	40%	\$1.43	4	4	Hawaii TRM
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	New	104.39	10	\$295.58	40%	75%	\$0.34	11	12	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	69.81	2	\$175.00	7%	75%	\$0.93	3	3	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	115.78	14	\$314.66	10%	at stock turnover	\$0.34	15	12	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	0.00	14	-\$148.86	16%	at stock turnover	\$10.00	0	0	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	New	166.68	15	\$962.45	15%	75%	\$0.50	31	32	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	2.96	20	\$39.50	0%	80%	\$0.03	1	1	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	34.38	18	\$497.62	28%	75%	\$0.12	3	3	Developed from RTF "ResSF Duct Sealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	New	118.12	15	\$3,913.00	0%	75%	\$0.19	7	5	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	58.56	20	\$667.47	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Home Energy Management System	Installation	New	53.42	10	\$275.00	15%	25%	\$0.06	2	2	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$313.97	75%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-49	Installation	New	13.62	25	\$732.60	57%	75%	\$0.33	1	1	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	New	44.38	20	\$640.82	48%	80%	\$0.17	2	2	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	New	62.13	25	\$1,744.28	66%	75%	\$0.32	2	2	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	New	28.05	25	\$1,045.87	15%	75%	\$0.23	5	5	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	New	2.00	25	\$3,478.37	68%	80%	\$2.46	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	New	15.89	25	\$2,940.47	15%	20%	\$0.70	0	0	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	New	172.91	12	\$206.81	5%	at stock turnover	\$0.16	1	1	BEST Simulation
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	New	100.84	8	\$49.00	0%	50%	\$0.08	2	2	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	New	54.05	5	\$698.88	15%	40%	\$1.99	4	4	PG&E Document "PGECOHC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	330.85	25	\$737.81	55%	75%	\$0.21	21	21	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	165.46	20	\$974.29	15%	75%	\$0.48	31	32	DEER
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Electronics	Devices and Gadgets - Standard	Installation	Existing	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	5.75	5	\$16.05	15%	50%	\$0.64	251	289	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	15.00	5	\$33.39	1%	2%	\$0.54	2	2	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	Existing	343.22	4	\$0.08	17%	at stock turnover	\$0.00	19	26	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	Existing	16.23	8	\$0.01	67%	at stock turnover	\$0.00	5	5	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	Existing	121.88	5	\$0.01	67%	at stock turnover	\$0.00	170	196	ENERGY STAR Calc
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	18.37	5	\$0.01	78%	at stock turnover	\$0.00	4	5	ENERGY STAR Calc
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	57.14	10	\$24.88	205%	at stock turnover	\$0.07	125	111	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Electronics	Devices and Gadgets - Standard	Installation	New	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	5.32	5	\$16.05	15%	50%	\$0.70	34	36	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	0	0	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	New	237.88	4	\$0.05	25%	at stock turnover	\$0.00	5	6	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	New	15.01	8	\$0.01	47%	at stock turnover	\$0.00	1	1	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	New	110.57	5	\$0.01	47%	at stock turnover	\$0.00	23	25	ENERGY STAR Calc
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	16.67	5	\$0.01	90%	at stock turnover	\$0.00	1	1	ENERGY STAR Calc
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	New	45.30	10	\$19.72	205%	at stock turnover	\$0.07	29	27	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	9.93	8	\$39.33	7%	50%	\$0.38	9	28	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	8.79	12	\$276.84	1%	30%	\$2.13	5	17	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	9.55	5	\$69.58	0%	50%	\$0.93	10	32	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	Existing	2.21	10	\$275.00	15%	25%	\$0.05	0	1	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	55.35	6	-\$1.98	100%	at stock turnover	-\$0.01	0	17	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	27.79	14	\$6.63	100%	at stock turnover	\$0.01	137	181	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	10.17	8	\$39.33	11%	50%	\$0.41	1	3	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	7.58	12	\$276.84	1%	30%	\$2.76	1	1	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	9.78	5	\$69.58	3%	50%	\$1.02	2	3	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	New	2.26	10	\$275.00	15%	25%	\$0.06	0	0	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	55.44	6	-\$1.98	100%	at stock turnover	-\$0.01	0	1	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	27.84	14	\$6.63	100%	at stock turnover	\$0.01	33	19	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	1,083.55	14	\$1,284.86	9%	at stock turnover	\$0.13	515	509	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	143.88	20	\$182.30	2%	80%	\$0.12	266	305	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	645.44	18	\$497.62	29%	75%	\$0.07	671	756	Developed from RTF "ResSFDuctSealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	Existing	2,004.72	15	\$3,913.00	0%	75%	\$0.19	223	220	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	46%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Electric Resistance - Standard	Installation	Existing	0.00	20	\$0.00	3%	at stock turnover	\$10.00	0	0	No Efficient Option
Manufactured Home	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	40.77	20	\$1,727.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	Existing	668.90	10	\$275.00	15%	25%	\$0.05	163	171	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	196.82	25	\$313.97	66%	75%	\$0.14	41	48	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-30	Installation	Existing	477.11	25	\$732.60	19%	75%	\$0.14	635	733	Developed from RTF "SFwx" v2.4 7/2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	Existing	243.33	20	\$640.82	48%	60%	\$0.21	48	55	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	Existing	455.93	25	\$872.14	36%	60%	\$0.15	252	298	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	Existing	281.46	25	\$1,045.87	15%	75%	\$0.31	388	467	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,478.37	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$2,940.47	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$8,625.00	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	-49.69	25	\$737.81	7%	75%	\$0.28	-77	-93	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	1,109.29	25	\$4,558.10	15%	75%	\$0.34	286	298	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	558.13	14	\$1,180.53	9%	at stock turnover	\$0.20	67	67	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	132.06	20	\$39.50	0%	80%	\$0.03	46	48	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	410.30	18	\$497.62	28%	75%	\$0.12	79	82	Developed from RTF "ResSFDuctSealing" v2.3

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	New	2,004.84	15	\$3,913.00	0%	75%	\$0.19	34	33	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	60%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Electric Resistance - Standard	Installation	New	0.00	20	\$0.00	3%	at stock turnover	\$10.00	0	0	No Efficient Option
Manufactured Home	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	14.05	20	\$1,234.76	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	New	635.19	10	\$275.00	15%	25%	\$0.06	27	29	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$313.97	75%	75%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-49	Installation	New	187.90	25	\$732.60	57%	75%	\$0.33	15	15	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	New	325.31	20	\$640.82	48%	80%	\$0.17	34	34	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	New	426.62	25	\$1,744.28	66%	75%	\$0.32	16	16	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	New	394.59	25	\$1,045.87	15%	75%	\$0.23	102	106	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	New	114.52	25	\$3,478.37	68%	80%	\$2.45	6	6	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	New	329.00	25	\$2,940.47	15%	20%	\$0.70	7	7	BEST Simulation
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$8,625.00	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	-10.80	25	\$737.81	55%	75%	\$0.21	-1	-1	Developed from RTF "SFwx" v2.4 7/2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	Existing	4.94	10	\$275.00	15%	25%	\$0.05	4	7	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	42.87	8	\$126.66	0%	10%	\$0.28	32	82	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.99	20	\$0.85	100%	at stock turnover	-\$0.22	25	28	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	23.88	6	-\$4.00	100%	at stock turnover	-\$0.05	0	71	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	11.99	14	\$4.45	100%	at stock turnover	\$0.02	588	778	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	23.42	6	-\$0.42	100%	at stock turnover	-\$0.02	0	44	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	11.76	14	\$4.95	100%	at stock turnover	-\$0.03	771	552	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	48.06	25	\$4,558.10	15%	75%	\$0.34	36	58	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	New	5.21	10	\$275.00	15%	25%	\$0.06	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	45.23	8	\$136.70	0%	10%	\$0.30	5	9	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.99	20	\$0.85	100%	at stock turnover	-\$0.22	6	7	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	23.88	6	-\$4.00	100%	at stock turnover	-\$0.05	0	3	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	11.99	14	\$4.45	100%	at stock turnover	\$0.02	140	80	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	23.42	6	-\$0.42	100%	at stock turnover	-\$0.02	0	2	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	11.76	14	\$4.95	100%	at stock turnover	-\$0.04	169	69	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	6%	at stock turnover	\$0.22	33	34	WAPA Fact Sheet
Manufactured Home	Miscellaneous	Miscellaneous - Standard	Installation	Existing	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	6%	at stock turnover	\$0.22	8	8	WAPA Fact Sheet
Manufactured Home	Miscellaneous	Miscellaneous - Standard	Installation	New	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	307.51	40	\$478.25	1%	5%	\$0.12	44	51	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	185.19	9	\$8.00	28%	50%	\$0.01	300	401	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	171.75	10	\$26.82	41%	75%	\$0.02	416	563	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	101.17	15	\$30.00	11%	75%	\$0.03	231	319	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	Existing	1,159.82	20	\$5,783.33	0%	30%	\$0.44	1,234	1,442	6th Plan
Manufactured Home	Water Heating	Water Heater - Timer	Installation	Existing	70.99	5	\$121.01	15%	75%	\$0.35	151	212	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,379.24	16	\$1,000.97	90%	at stock turnover	\$0.08	1,821	1,902	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	230.16	40	\$478.25	1%	10%	\$0.12	14	13	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	New	131.45	9	\$8.00	28%	50%	\$0.01	39	38	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	122.70	10	\$26.82	42%	75%	\$0.02	54	52	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	New	73.17	15	\$30.00	11%	75%	\$0.03	32	31	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	New	837.67	20	\$5,783.33	0%	30%	\$0.45	170	163	6th Plan
Manufactured Home	Water Heating	Water Heater - Timer	Installation	New	52.83	5	\$121.01	15%	75%	\$0.35	21	21	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,379.24	16	\$1,000.97	90%	at stock turnover	\$0.08	472	475	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	168.94	14	\$306.84	47%	at stock turnover	\$0.23	69	69	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	14.56	14	\$49.70	47%	at stock turnover	\$0.42	17	16	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	8.90	15	\$6.92	78%	at stock turnover	\$0.09	27	25	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	744.77	5	\$103.00	0%	7%	\$0.02	7	8	PacifiCorp Program Data
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	91.80	21	\$12.44	4%	at stock turnover	\$0.01	3	3	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	Existing	8.52	15	\$88.95	97%	at stock turnover	\$1.25	14	13	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	117.95	17	\$71.90	100%	at stock turnover	\$0.07	47	49	Developed from RTF "ResRefrigerators" v2.2 (4/2013)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	986.83	7	\$103.00	0%	60%	\$0.01	69	77	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	226.93	17	\$76.00	3%	at stock turnover	\$0.04	6	6	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	Existing	1.02	17	\$112.36	97%	at stock turnover	\$12.34	1	1	DOE Report
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	168.94	14	\$306.84	23%	at stock turnover	\$0.23	5	5	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	New	14.56	14	\$49.70	23%	at stock turnover	\$0.42	1	1	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	8.90	15	\$6.92	16%	at stock turnover	\$0.09	1	1	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	New	569.83	5	\$103.00	0%	7%	\$0.03	1	1	PacifiCorp Program Data
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	91.80	21	\$12.44	4%	at stock turnover	\$0.01	0	0	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	New	8.52	15	\$88.95	97%	at stock turnover	\$1.25	2	2	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	117.95	17	\$71.90	100%	at stock turnover	\$0.07	7	7	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	731.32	7	\$103.00	0%	60%	\$0.02	5	5	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	226.93	17	\$76.00	3%	at stock turnover	\$0.04	1	1	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	New	1.02	17	\$112.36	82%	at stock turnover	\$12.34	0	0	DOE Report
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	87.09	14	\$460.86	27%	at stock turnover	\$0.11	108	107	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	38.57	5	\$500.00	2%	10%	\$2.54	7	10	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Cooling	Ceiling Fan - Installation	Installation	Existing	50.93	10	\$295.58	40%	75%	\$0.74	41	52	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	46.22	2	\$175.00	1%	75%	\$1.79	6	7	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	62.21	14	\$416.38	5%	at stock turnover	\$0.83	3	3	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	Existing	43.71	2	\$175.00	0%	75%	\$1.26	47	55	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	0.00	14	-\$323.66	0%	at stock turnover	\$10.00	0	0	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	Existing	0.00	15	\$855.54	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	0.00	20	\$182.30	74%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	7.33	18	\$215.37	30%	75%	\$2.63	5	7	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	85.15	15	\$3,913.00	1%	75%	\$0.70	136	66	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	28.29	20	\$304.05	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	Existing	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.00	25	\$175.59	50%	75%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-30	Installation	Existing	0.00	25	\$409.71	26%	75%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	Existing	7.25	20	\$640.82	2%	60%	\$7.46	7	8	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	Existing	36.76	25	\$487.75	13%	60%	\$0.40	46	53	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	Existing	34.60	30	\$584.91	15%	75%	\$0.20	57	63	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$385.03	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$325.49	15%	15%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Room AC - EER 11.5	Installation	Existing	20.88	12	\$311.73	28%	at stock turnover	\$2.03	6	6	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	Existing	117.93	8	\$49.00	0%	50%	\$0.07	61	62	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Whole-House Fan - Installation	Installation	Existing	38.43	5	\$698.88	2%	10%	\$3.55	7	10	PG&E Document "PGECOHC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$772.61	26%	75%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	85.24	20	\$352.08	33%	75%	\$0.39	97	109	DEER
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	41.24	25	\$4,558.10	15%	75%	\$2.28	6	7	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	76.74	14	\$411.84	24%	at stock turnover	\$0.15	14	14	BEST Simulation
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	30.93	5	\$500.00	2%	10%	\$2.85	1	1	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Cooling	Ceiling Fan - Installation	Installation	New	42.53	10	\$295.58	40%	75%	\$0.86	4	4	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	34.91	2	\$175.00	1%	75%	\$2.09	0	0	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	51.93	14	\$427.95	5%	at stock turnover	\$1.02	1	1	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	0%	75%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	0.00	14	-\$335.22	0%	at stock turnover	\$10.00	0	0	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	New	0.00	15	\$759.51	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	80%	80%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	2.54	18	\$215.37	30%	75%	\$6.87	0	0	Developed from RTF "ResSFDDuctSealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	New	73.16	15	\$3,913.00	6%	75%	\$1.24	11	7	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	25.72	20	\$271.71	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	New	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$175.59	73%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-49	Installation	New	0.00	25	\$409.71	17%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	New	5.00	20	\$640.82	13%	80%	\$9.89	1	1	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	New	30.22	25	\$975.50	30%	75%	\$1.34	3	4	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	New	2.15	45	\$1,276.53	43%	75%	\$2.58	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	New	52.53	30	\$584.91	15%	75%	\$0.17	8	9	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$385.03	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	New	0.00	25	\$325.49	15%	20%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Room AC - EER 11.5	Installation	New	18.45	12	\$320.39	28%	at stock turnover	\$2.36	1	1	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	New	104.22	8	\$49.00	0%	50%	\$0.08	5	5	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Whole-House Fan - Installation	Installation	New	30.77	5	\$698.88	2%	10%	\$3.99	1	1	PG&E Document "PGECHVC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$772.61	37%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	82.68	20	\$352.08	53%	75%	\$0.38	5	5	DEER
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Electronics	Devices and Gadgets - Standard	Installation	Existing	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	3.29	5	\$8.97	15%	50%	\$0.63	98	113	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	15.00	5	\$33.39	1%	2%	\$0.54	2	2	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	Existing	468.90	4	\$0.11	12%	at stock turnover	\$0.00	11	15	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	Existing	22.17	8	\$0.02	59%	at stock turnover	\$0.00	4	4	ENERGY STAR Calc
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	Existing	166.51	5	\$0.02	59%	at stock turnover	\$0.00	125	144	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	23.92	5	\$0.02	67%	at stock turnover	\$0.00	3	4	ENERGY STAR Calc
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	100.40	10	\$32.89	152%	at stock turnover	\$0.05	103	92	PG&E Document "PGEAPP104 Energy Efficient Televisions"
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Electronics	Devices and Gadgets - Standard	Installation	New	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	2.88	5	\$8.97	15%	50%	\$0.73	9	9	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	0	0	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	New	323.88	4	\$0.07	24%	at stock turnover	\$0.00	3	3	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	New	15.52	8	\$0.01	41%	at stock turnover	\$0.00	0	0	ENERGY STAR Calc
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	New	126.26	5	\$0.01	41%	at stock turnover	\$0.00	11	12	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	18.14	5	\$0.01	114%	at stock turnover	\$0.00	1	1	ENERGY STAR Calc
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	New	109.93	10	\$36.02	137%	at stock turnover	\$0.05	14	13	PG&E Document "PGEAPP104 Energy Efficient Televisions"
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	9.21	8	\$35.91	1%	50%	\$0.37	8	24	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	8.11	12	\$252.77	1%	30%	\$2.10	4	13	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	8.81	5	\$63.53	1%	50%	\$0.92	8	24	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	Existing	1.82	10	\$275.00	15%	25%	\$2.47	0	1	BEST Simulation
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	57.60	6	-\$2.02	100%	at stock turnover	-\$0.01	0	12	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	28.92	14	\$6.75	100%	at stock turnover	\$0.01	105	134	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	10.65	8	\$35.91	0%	50%	\$0.36	1	2	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	7.82	12	\$252.77	1%	30%	\$2.42	0	1	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	10.12	5	\$63.53	0%	50%	\$0.89	1	2	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Exterior Lighting	Home Energy Management System	Installation	New	2.08	10	\$275.00	15%	25%	\$4.13	0	0	BEST Simulation
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	57.69	6	-\$2.02	100%	at stock turnover	-\$0.01	0	0	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	28.97	14	\$6.75	100%	at stock turnover	\$0.01	19	11	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	150.14	14	\$210.22	27%	at stock turnover	\$0.11	188	186	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	Existing	17.84	2	\$175.00	0%	75%	\$1.26	18	22	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	124.32	20	\$182.30	74%	80%	\$0.15	33	36	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	0.00	18	\$215.37	30%	75%	\$0.00	0	0	Developed from RTF "ResSFDuctSealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	Existing	346.74	15	\$3,913.00	1%	75%	\$0.70	590	631	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	5%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Electric Resistance - Standard	Installation	Existing	0.00	20	\$0.00	66%	at stock turnover	\$10.00	0	0	No Efficient Option
Multifamily	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	4.94	20	\$1,727.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	Existing	6.26	10	\$275.00	15%	25%	\$2.66	2	3	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	70.23	25	\$175.59	50%	75%	\$0.21	65	80	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-30	Installation	Existing	181.32	25	\$409.71	26%	75%	\$0.20	338	396	Developed from RTF "SFwx" v2.4 7/2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Insulation - Ducting - R-8	Installation	Existing	0.00	20	\$640.82	2%	60%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	Existing	67.46	25	\$487.75	13%	60%	\$0.40	118	145	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	Existing	237.16	30	\$584.91	15%	75%	\$0.20	577	632	ORNL.gov Calculator
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$385.03	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$325.49	15%	15%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$3,076.56	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$772.61	26%	75%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	59.61	25	\$4,558.10	15%	75%	\$2.28	8	9	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	70.72	14	\$182.63	24%	at stock turnover	\$0.15	13	13	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	0%	75%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	80%	80%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	0.00	18	\$215.37	30%	75%	\$0.00	0	0	Developed from RTF "ResSF Duct Sealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	New	116.04	15	\$3,913.00	6%	75%	\$1.24	7	7	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	5%	at stock turnover	\$10.00	0	0	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Electric Resistance - Standard	Installation	New	0.00	20	\$0.00	23%	at stock turnover	\$10.00	0	0	No Efficient Option
Multifamily	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	1.60	20	\$191.01	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	New	0.14	10	\$275.00	15%	25%	\$4.83	0	0	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	41.52	25	\$175.59	73%	75%	\$0.30	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-49	Installation	New	24.10	25	\$409.71	17%	75%	\$1.22	3	3	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	New	0.00	20	\$640.82	13%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	New	24.89	25	\$975.50	30%	75%	\$1.34	2	3	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	New	23.58	45	\$1,276.53	43%	75%	\$2.58	2	2	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	New	250.17	30	\$584.91	15%	75%	\$0.17	36	37	ORNL.gov Calculator
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$385.03	80%	80%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	New	104.67	25	\$325.49	15%	20%	\$0.23	1	1	BEST Simulation
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$3,076.56	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$772.61	37%	75%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	Existing	2.74	10	\$275.00	15%	25%	\$2.50	2	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	26.09	8	\$54.21	0%	10%	\$0.20	16	40	DEER
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.93	20	\$0.85	100%	at stock turnover	-\$0.22	9	10	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	23.00	6	-\$3.96	100%	at stock turnover	-\$0.05	0	43	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	11.55	14	\$4.40	100%	at stock turnover	\$0.02	368	468	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	22.43	6	-\$0.42	100%	at stock turnover	-\$0.02	0	8	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	11.26	14	\$4.92	100%	at stock turnover	-\$0.03	148	102	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	32.54	25	\$4,558.10	15%	75%	\$2.19	13	22	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	New	2.75	10	\$275.00	15%	25%	\$4.19	0	0	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	30.51	8	\$54.21	2%	10%	\$0.19	2	3	DEER
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.93	20	\$0.85	100%	at stock turnover	-\$0.22	2	2	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	23.00	6	-\$3.96	100%	at stock turnover	-\$0.05	0	1	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	11.55	14	\$4.40	100%	at stock turnover	\$0.02	66	37	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	22.43	6	-\$0.42	100%	at stock turnover	-\$0.02	0	0	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	11.26	14	\$4.92	100%	at stock turnover	-\$0.04	24	10	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Miscellaneous - Standard	Installation	Existing	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Miscellaneous - Standard	Installation	New	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	294.92	40	\$478.25	1%	5%	\$0.12	37	43	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	187.10	9	\$8.00	12%	50%	\$0.01	453	592	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	170.11	10	\$13.41	18%	75%	\$0.01	614	821	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	97.53	15	\$30.00	11%	75%	\$0.03	196	270	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	Existing	1,116.52	20	\$5,783.33	1%	30%	\$0.43	1,006	1,192	6th Plan
Multifamily	Water Heating	Water Heater - Timer	Installation	Existing	68.09	5	\$121.01	15%	75%	\$0.35	127	179	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,408.83	16	\$1,000.97	91%	at stock turnover	\$0.08	1,542	1,587	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	7%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	219.50	40	\$478.25	1%	10%	\$0.12	6	6	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	New	132.12	9	\$8.00	8%	50%	\$0.01	33	32	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	120.87	10	\$13.41	13%	75%	\$0.01	45	43	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	New	69.95	15	\$30.00	11%	75%	\$0.03	13	13	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	New	801.76	20	\$5,783.33	1%	30%	\$0.45	69	66	6th Plan
Multifamily	Water Heating	Water Heater - Timer	Installation	New	50.39	5	\$121.01	15%	75%	\$0.36	9	9	http://michaelbluejay.com/electricity/waterheaters.html

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,408.83	16	\$1,000.97	68%	at stock turnover	\$0.08	202	204	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	5%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	213.59	14	\$306.84	93%	at stock turnover	\$0.18	981	981	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	14.61	14	\$49.70	97%	at stock turnover	\$0.42	200	189	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	7.79	15	\$6.92	74%	at stock turnover	\$0.11	126	117	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	744.77	5	\$103.00	0%	7%	\$0.02	554	695	PacifiCorp Program Data
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	91.80	21	\$12.44	60%	at stock turnover	\$0.01	217	217	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	Existing	8.52	15	\$88.95	97%	at stock turnover	\$1.25	76	73	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	117.95	17	\$71.90	100%	at stock turnover	\$0.07	264	269	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	984.75	7	\$103.00	0%	60%	\$0.01	3,829	4,258	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	226.93	17	\$76.00	30%	at stock turnover	\$0.04	359	362	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	Existing	1.27	17	\$112.36	84%	at stock turnover	\$9.94	8	8	DOE Report
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	213.59	14	\$306.84	93%	at stock turnover	\$0.18	81	81	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	New	14.61	14	\$49.70	97%	at stock turnover	\$0.42	16	15	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	7.79	15	\$6.92	89%	at stock turnover	\$0.11	11	10	Developed from RTF "ResDishwasher" v2.2 (12/2012)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	New	559.22	5	\$103.00	0%	7%	\$0.03	26	26	PacifiCorp Program Data
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	91.80	21	\$12.44	60%	at stock turnover	\$0.01	17	17	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	New	8.52	15	\$88.95	97%	at stock turnover	\$1.25	6	6	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	117.95	17	\$71.90	100%	at stock turnover	\$0.07	23	23	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	721.81	7	\$103.00	0%	60%	\$0.02	79	81	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	226.93	17	\$76.00	15%	at stock turnover	\$0.04	15	16	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	New	1.27	17	\$112.36	71%	at stock turnover	\$9.94	1	1	DOE Report
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	223.93	14	\$1,184.92	16%	at stock turnover	\$0.14	938	928	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	73.10	5	\$500.00	15%	40%	\$1.23	176	229	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	Existing	111.81	10	\$295.58	40%	75%	\$0.36	445	498	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	101.48	2	\$175.00	7%	75%	\$0.71	115	145	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	124.36	14	\$349.43	9%	at stock turnover	\$0.35	218	179	BEST Simulation
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	505.04	14	-\$222.82	8%	at stock turnover	-\$0.39	61	51	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	Existing	117.03	15	\$776.12	15%	75%	\$0.61	710	883	PG&E Study: Residential Cool Roof

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	8.79	20	\$182.30	43%	80%	\$0.16	37	42	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	64.33	20	\$497.62	30%	75%	\$0.10	210	235	Developed from RTF "ResSF Duct Sealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	116.91	15	\$3,913.00	1%	75%	\$0.15	539	252	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	72.75	20	\$781.75	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	Existing	71.31	10	\$275.00	15%	25%	\$0.05	86	91	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.27	45	\$239.75	34%	75%	\$0.16	1	1	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Ceiling - R-30	Installation	Existing	15.52	45	\$559.42	43%	75%	\$0.26	57	65	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	Existing	41.12	20	\$640.82	52%	60%	\$0.20	23	26	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	Existing	80.30	45	\$1,158.80	49%	60%	\$0.18	101	114	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	Existing	22.09	30	\$798.64	15%	75%	\$0.26	152	172	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,219.58	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$2,721.70	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Room AC - Evaporative Room AC	Installation	Existing	210.74	12	\$156.42	14%	at stock turnover	\$0.10	63	63	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	Existing	116.66	8	\$49.00	0%	50%	\$0.07	168	171	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	Existing	72.37	5	\$698.88	15%	40%	\$1.72	172	227	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	338.99	45	\$2,242.48	33%	75%	\$0.54	1,592	1,861	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	157.22	20	\$1,021.90	15%	75%	\$0.55	995	1,243	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	33.50	25	\$4,558.10	15%	75%	\$0.36	13	13	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	197.32	14	\$1,058.89	16%	at stock turnover	\$0.23	74	74	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	76.80	5	\$500.00	15%	40%	\$1.04	12	12	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	New	123.55	10	\$295.58	40%	75%	\$0.32	27	28	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	82.50	2	\$175.00	7%	75%	\$0.79	16	16	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	126.51	14	\$311.04	24%	at stock turnover	\$0.31	41	40	BEST Simulation
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	0.00	14	-\$184.43	0%	at stock turnover	\$10.00	0	0	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	New	163.63	15	\$689.01	15%	75%	\$0.39	61	63	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	4.45	20	\$39.50	35%	80%	\$0.04	1	1	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	28.24	20	\$497.62	30%	75%	\$0.19	7	8	Developed from RTF "ResSFDuctSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	New	136.75	15	\$3,913.00	1%	75%	\$0.16	11	7	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	66.14	20	\$698.60	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	New	75.61	10	\$275.00	15%	25%	\$0.05	5	5	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	2.58	45	\$239.75	71%	75%	\$0.16	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Ceiling - R-49	Installation	New	4.62	45	\$559.42	30%	75%	\$0.62	1	1	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	New	39.64	20	\$640.82	79%	80%	\$0.19	0	0	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	New	90.10	45	\$1,824.77	76%	76%	\$0.31	0	0	Developed from RTF "SFwx" v2.4 7/2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Insulation - Foundation - R-10	Installation	New	7.18	45	\$1,276.53	7%	75%	\$0.23	3	3	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	New	36.55	30	\$798.64	15%	75%	\$0.20	14	14	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,219.58	80%	80%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	New	28.38	25	\$2,721.70	2%	20%	\$0.60	3	3	BEST Simulation
Single Family	Cooling	Room AC - Evaporative Room AC	Installation	New	148.64	12	\$234.63	4%	at stock turnover	\$0.21	2	2	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	New	100.81	8	\$49.00	0%	50%	\$0.08	2	2	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	New	75.64	5	\$698.88	15%	40%	\$1.46	12	12	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	446.68	45	\$2,242.48	47%	75%	\$0.35	79	81	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	193.16	20	\$1,021.90	15%	75%	\$0.40	72	74	DEER
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Electronics	Devices and Gadgets - Standard	Installation	Existing	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	4.56	5	\$12.25	15%	50%	\$0.62	1,155	1,302	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	15.00	5	\$33.39	1%	2%	\$0.54	9	9	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	Existing	126.99	4	\$0.03	34%	at stock turnover	\$0.00	174	239	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	Existing	10.45	8	\$0.01	110%	at stock turnover	\$0.00	41	38	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	Existing	78.46	5	\$0.01	110%	at stock turnover	\$0.00	1,313	1,499	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	14.91	5	\$0.01	108%	at stock turnover	\$0.00	29	33	ENERGY STAR Calc

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	53.34	10	\$21.37	228%	at stock turnover	\$0.06	721	643	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Electronics	Devices and Gadgets - Standard	Installation	New	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	4.22	5	\$12.25	15%	50%	\$0.67	57	60	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	1	1	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	New	76.76	4	\$0.02	49%	at stock turnover	\$0.00	17	20	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	New	12.92	8	\$0.01	77%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	New	95.94	5	\$0.01	77%	at stock turnover	\$0.00	65	68	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	10.13	5	\$0.01	124%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	New	56.60	10	\$22.68	239%	at stock turnover	\$0.06	61	57	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	25.96	8	\$104.30	8%	50%	\$0.38	112	320	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	23.02	12	\$734.23	1%	30%	\$2.17	65	201	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	24.99	5	\$184.53	2%	50%	\$0.95	122	359	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	Existing	5.77	10	\$275.00	15%	25%	\$0.05	6	12	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	55.35	6	-\$1.98	100%	at stock turnover	-\$0.01	0	185	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	27.79	14	\$6.63	100%	at stock turnover	\$0.01	1,670	2,052	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	26.48	8	\$104.30	3%	50%	\$0.42	7	14	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	19.51	12	\$734.23	1%	30%	\$2.82	3	6	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	25.23	5	\$184.53	0%	50%	\$1.04	7	14	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	New	5.89	10	\$275.00	15%	25%	\$0.05	0	1	BEST Simulation
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	55.44	6	-\$1.98	100%	at stock turnover	-\$0.01	0	3	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	27.84	14	\$6.63	100%	at stock turnover	\$0.01	144	82	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	1,015.76	14	\$1,422.28	16%	at stock turnover	\$0.14	4,294	4,251	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	100.44	20	\$182.30	43%	80%	\$0.16	286	347	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	399.22	20	\$497.62	30%	75%	\$0.10	1,095	1,275	Developed from RTF "ResSFductSealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	Existing	2,725.56	15	\$3,913.00	1%	75%	\$0.15	4,424	4,237	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	6%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Electric Resistance - Standard	Installation	Existing	0.00	20	\$0.00	10%	at stock turnover	\$10.00	0	0	No Efficient Option
Single Family	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	33.40	20	\$1,727.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	Existing	712.61	10	\$275.00	15%	25%	\$0.05	584	640	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	118.49	45	\$239.75	34%	75%	\$0.16	375	455	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-30	Installation	Existing	154.23	45	\$559.42	43%	75%	\$0.26	379	464	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	Existing	273.42	20	\$640.82	52%	60%	\$0.20	21	23	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	Existing	423.88	45	\$1,158.80	49%	60%	\$0.18	355	433	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	Existing	237.15	30	\$798.64	15%	75%	\$0.26	1,080	1,327	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,219.58	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$2,721.70	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$9,337.50	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	-10.35	45	\$2,242.48	33%	75%	\$0.54	-33	-41	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	919.85	25	\$4,558.10	15%	75%	\$0.35	293	317	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	478.46	14	\$1,235.59	16%	at stock turnover	\$0.23	179	179	BEST Simulation
Single Family	Heating	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	91.13	20	\$39.50	35%	80%	\$0.04	22	24	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	235.50	20	\$497.62	30%	75%	\$0.19	43	47	Developed from RTF "ResSFductSealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	New	2,364.80	15	\$3,913.00	1%	75%	\$0.16	244	236	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	15%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Electric Resistance - Standard	Installation	New	0.00	20	\$0.00	12%	at stock turnover	\$10.00	0	0	No Efficient Option
Single Family	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	10.81	20	\$1,292.32	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	New	676.22	10	\$275.00	15%	25%	\$0.05	36	39	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	123.87	45	\$239.75	71%	75%	\$0.16	3	3	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-49	Installation	New	54.61	45	\$559.42	30%	75%	\$0.62	13	14	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	New	305.15	20	\$640.82	79%	80%	\$0.19	0	0	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	New	350.70	45	\$1,824.77	76%	76%	\$0.31	1	1	Developed from RTF "SFwx" v2.4 7/2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Insulation - Foundation - R-10	Installation	New	413.33	45	\$1,276.53	7%	75%	\$0.23	149	161	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	New	299.48	30	\$798.64	15%	75%	\$0.20	96	104	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,219.58	80%	80%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	New	315.64	25	\$2,721.70	2%	20%	\$0.60	31	33	BEST Simulation
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$9,337.50	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	28.98	45	\$2,242.48	47%	75%	\$0.35	4	5	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	Existing	7.99	10	\$275.00	15%	25%	\$0.05	27	49	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	69.35	8	\$109.32	0%	10%	\$0.14	233	586	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.74	20	\$0.85	100%	at stock turnover	-\$0.25	170	183	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	20.55	6	-\$3.94	100%	at stock turnover	-\$0.06	0	414	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	10.32	14	\$4.38	100%	at stock turnover	\$0.02	3,748	4,605	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	20.05	6	-\$0.43	100%	at stock turnover	-\$0.02	0	517	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	10.07	14	\$5.01	100%	at stock turnover	-\$0.04	9,847	6,578	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	78.63	25	\$4,558.10	15%	75%	\$0.35	95	160	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	New	8.53	10	\$275.00	15%	25%	\$0.05	2	3	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	73.98	8	\$117.67	0%	10%	\$0.15	14	24	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.74	20	\$0.85	100%	at stock turnover	-\$0.25	16	16	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	20.55	6	-\$3.94	100%	at stock turnover	-\$0.06	0	7	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	10.32	14	\$4.38	100%	at stock turnover	\$0.03	323	184	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	20.05	6	-\$0.43	100%	at stock turnover	-\$0.02	0	9	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	10.07	14	\$5.01	100%	at stock turnover	-\$0.05	782	318	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	16%	at stock turnover	\$0.22	395	392	WAPA Fact Sheet
Single Family	Miscellaneous	Miscellaneous - Standard	Installation	Existing	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.07	437	434	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	Existing	1,547.19	20	\$3,682.80	0%	30%	\$0.19	50	80	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	Existing	185.25	10	\$30.00	1%	75%	\$0.02	76	91	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	3%	at stock turnover	\$0.11	257	255	CEC 2000 Appliance Standards
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	19%	at stock turnover	\$0.22	41	39	WAPA Fact Sheet
Single Family	Miscellaneous	Miscellaneous - Standard	Installation	New	0.00	5	\$0.00	100%	at stock turnover	\$10.00	0	0	No Efficient Option
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.07	37	36	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	New	1,118.43	20	\$3,682.80	0%	30%	\$0.19	2	3	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	New	154.94	10	\$30.00	1%	75%	\$0.02	4	4	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	3%	at stock turnover	\$0.11	22	21	CEC 2000 Appliance Standards
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	Existing	1,199.54	20	\$1,117.41	0%	0%	\$0.09	53	62	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	307.08	40	\$600.05	1%	5%	\$0.16	181	213	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	218.69	9	\$16.00	34%	50%	\$0.01	1,056	1,370	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	204.44	10	\$26.82	51%	75%	\$0.02	1,477	1,935	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	122.15	15	\$30.00	11%	75%	\$0.03	1,154	1,532	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	Existing	1,399.98	20	\$5,783.33	1%	30%	\$0.37	5,946	7,050	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	Existing	70.93	5	\$121.01	15%	75%	\$0.35	624	842	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,691.00	16	\$1,000.97	73%	at stock turnover	\$0.07	7,679	7,788	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	10%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	New	0.00	1	\$12.00	0%	0%	\$10.00	0	0	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	New	912.52	20	\$1,117.41	0%	0%	\$0.09	2	2	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	233.53	40	\$585.52	1%	10%	\$0.15	13	12	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	New	155.01	9	\$16.00	43%	50%	\$0.01	13	12	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	146.89	10	\$26.82	65%	75%	\$0.02	18	17	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	New	89.30	15	\$30.00	11%	75%	\$0.03	35	34	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	New	1,027.52	20	\$5,783.33	1%	30%	\$0.39	183	176	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	New	53.68	5	\$121.01	15%	75%	\$0.37	20	19	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,691.00	16	\$1,000.97	44%	at stock turnover	\$0.07	474	478	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	6%	at stock turnover	\$10.00	0	0	BEST Simulation

Idaho Residential Measure Assumptions

Table H-2 Table of Idaho Residential Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.31	1	\$12.00	0%	26%	\$0.05	43	52	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	185.49	14	\$306.84	85%	at stock turnover	\$0.21	227	227	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.90	14	\$262.41	98%	at stock turnover	\$0.91	131	122	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	9.14	15	\$6.92	74%	at stock turnover	\$0.09	39	37	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	900.84	5	\$105.00	0%	5%	\$0.01	137	171	PacifiCorp Program Data
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.43	21	\$12.44	70%	at stock turnover	\$0.01	60	60	Developed from RTF "ResFreezer" v2.2 (11/2012)
Manufactured Home	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	98%	at stock turnover	\$1.24	20	19	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	97.07	17	\$71.90	100%	at stock turnover	\$0.08	56	57	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,020.17	7	\$105.00	0%	75%	\$0.01	750	898	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	164.85	17	\$76.00	21%	at stock turnover	\$0.05	41	41	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	Existing	0.89	17	\$112.36	60%	at stock turnover	\$14.11	1	1	DOE Report
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	New	4.87	1	\$12.00	0%	26%	\$0.06	16	17	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	185.49	14	\$306.84	93%	at stock turnover	\$0.21	93	93	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.90	14	\$262.41	97%	at stock turnover	\$0.91	53	50	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	9.14	15	\$6.92	89%	at stock turnover	\$0.09	17	16	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	New	689.27	5	\$105.00	0%	5%	\$0.02	50	52	PacifiCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.43	21	\$12.44	109%	at stock turnover	\$0.01	40	40	Developed from RTF "ResFreezer" v2.2 (11/2012)
Manufactured Home	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	98%	at stock turnover	\$1.24	9	8	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	97.07	17	\$71.90	100%	at stock turnover	\$0.08	25	25	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	845.81	7	\$105.00	0%	75%	\$0.02	284	296	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	164.84	17	\$76.00	32%	at stock turnover	\$0.05	28	28	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	New	0.89	17	\$112.36	61%	at stock turnover	\$14.11	1	1	DOE Report
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	151.58	14	\$1,241.71	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	45.27	5	\$500.00	15%	40%	\$1.68	27	40	Hawaii TRM
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	Existing	10.38	1	\$12.00	0%	26%	\$0.05	9	10	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	Existing	70.02	10	\$295.58	40%	75%	\$0.46	68	89	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	90.67	2	\$175.00	7%	75%	\$0.75	29	37	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	116.13	14	\$386.20	10%	at stock turnover	\$0.41	82	67	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	0.00	14	-\$237.50	20%	at stock turnover	\$10.00	0	0	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	Existing	108.75	15	\$1,026.71	15%	75%	\$0.74	167	234	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	6.69	20	\$182.30	2%	80%	\$0.12	18	19	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	67.67	18	\$419.03	29%	75%	\$0.03	18	19	Developed from RTF "ResSFDuctSealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	314.54	15	\$3,713.00	0%	75%	\$0.15	408	431	Developed from RTF DHP_UES v1.5 (under review)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	161.10	15	\$148.70	20%	at stock turnover	\$0.11	71	73	New Buildings Institute Study, 2006
Manufactured Home	Cooling	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	Existing	178.09	20	\$1,638.43	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	Existing	51.05	10	\$275.00	15%	25%	\$0.04	18	19	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	2.12	25	\$281.59	66%	75%	\$0.04	1	1	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-30	Installation	Existing	39.78	25	\$657.04	19%	75%	\$0.05	78	83	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	Existing	42.87	20	\$640.82	48%	60%	\$0.12	3	3	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	Existing	58.78	25	\$782.19	36%	60%	\$0.08	48	52	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	Existing	17.93	25	\$938.00	15%	75%	\$0.46	29	42	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,468.32	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$2,931.98	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	Existing	258.83	12	\$283.82	24%	at stock turnover	\$0.15	52	52	BEST Simulation
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	Existing	114.36	8	\$49.00	0%	50%	\$0.07	103	106	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	Existing	44.84	5	\$698.88	15%	40%	\$2.34	26	40	PG&E Document "PGECHVC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	237.89	25	\$788.57	7%	75%	\$0.44	499	612	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	111.93	20	\$1,041.32	15%	75%	\$0.68	182	260	DEER
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	25.47	25	\$4,558.10	9%	45%	\$0.20	7	8	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	131.08	14	\$1,044.31	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	50.41	5	\$500.00	15%	40%	\$1.68	10	11	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	New	10.35	1	\$12.00	0%	26%	\$0.06	3	3	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	New	76.08	10	\$295.58	40%	75%	\$0.46	21	23	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	74.41	2	\$175.00	7%	75%	\$1.01	8	8	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	106.29	14	\$324.80	10%	at stock turnover	\$0.38	35	29	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	0.00	14	-\$176.10	19%	at stock turnover	\$10.00	0	0	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	New	166.75	15	\$911.46	9%	45%	\$0.50	48	51	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	2.42	20	\$39.50	0%	45%	\$0.03	1	1	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	28.91	18	\$419.03	8%	20%	\$0.04	1	1	Developed from RTF "ResSFductSealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	New	327.69	15	\$3,713.00	0%	75%	\$0.15	90	92	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	177.21	15	\$148.70	19%	at stock turnover	\$0.10	35	36	New Buildings Institute Study, 2006
Manufactured Home	Cooling	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	New	155.39	20	\$1,377.96	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	New	49.10	10	\$275.00	15%	25%	\$0.04	4	4	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$281.59	75%	75%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-49	Installation	New	22.07	25	\$657.04	34%	45%	\$0.08	2	2	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	New	40.07	20	\$640.82	27%	45%	\$0.09	1	1	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	New	53.13	25	\$1,564.37	40%	45%	\$0.18	2	2	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	New	26.22	25	\$938.00	9%	45%	\$0.35	8	8	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	New	1.95	25	\$3,468.32	38%	45%	\$1.84	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	New	14.25	25	\$2,931.98	15%	20%	\$0.54	1	1	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	New	206.72	12	\$283.82	18%	at stock turnover	\$0.19	14	14	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	New	103.54	8	\$49.00	0%	50%	\$0.08	19	19	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	New	49.64	5	\$698.88	15%	40%	\$2.35	10	10	PG&E Document "PGECHVC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	267.06	25	\$788.57	33%	45%	\$0.29	26	27	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	148.82	20	\$1,041.32	4%	20%	\$0.53	19	20	DEER
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.57	1	\$12.00	0%	26%	\$0.05	25	31	OPower
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	4.75	5	\$14.39	15%	50%	\$0.70	301	357	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.95	5	\$33.39	1%	2%	\$0.54	3	3	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	Existing	343.22	4	\$0.08	10%	at stock turnover	\$0.00	17	22	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	Existing	16.23	8	\$0.01	61%	at stock turnover	\$0.00	6	5	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	Existing	121.88	5	\$0.01	61%	at stock turnover	\$0.00	234	263	ENERGY STAR Calc
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	18.37	5	\$0.01	78%	at stock turnover	\$0.00	7	8	ENERGY STAR Calc
Manufactured Home	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	4.84	5	\$11.47	173%	at stock turnover	\$0.00	38	56	NCTA Agreement
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	59.37	10	\$24.88	220%	at stock turnover	\$0.06	183	164	PG&E Document "PGEAPP104 Energy Efficient Televisions"
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	New	1.55	1	\$12.00	0%	26%	\$0.06	10	11	OPower
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	4.93	5	\$14.39	15%	50%	\$0.69	101	109	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	1	1	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	New	237.88	4	\$0.05	15%	at stock turnover	\$0.00	9	10	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	New	15.01	8	\$0.01	66%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	New	110.57	5	\$0.01	67%	at stock turnover	\$0.00	92	96	ENERGY STAR Calc

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	16.67	5	\$0.01	86%	at stock turnover	\$0.00	3	3	ENERGY STAR Calc
Manufactured Home	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	3.83	5	\$9.09	218%	at stock turnover	\$0.00	17	20	NCTA Agreement
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	New	47.06	10	\$19.72	278%	at stock turnover	\$0.06	94	88	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.91	1	\$12.00	0%	26%	\$0.05	1	3	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	10.31	8	\$39.33	7%	50%	\$0.37	11	34	http://www.greenyour.com/office/of-ice-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	9.14	12	\$276.84	1%	30%	\$2.10	6	21	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	9.92	5	\$69.58	0%	50%	\$0.92	12	38	http://www.greenyour.com/office/of-ice-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	Existing	2.30	10	\$275.00	15%	25%	\$0.04	1	1	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	53.85	6	-\$1.98	100%	at stock turnover	-\$0.01	0	14	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	27.04	14	\$6.63	100%	at stock turnover	\$0.01	162	184	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.83	1	\$12.00	0%	26%	\$0.06	0	0	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	9.45	8	\$39.33	10%	45%	\$0.43	3	5	http://www.greenyour.com/office/of-ice-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	7.08	12	\$276.84	1%	30%	\$2.93	2	3	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	9.13	5	\$69.58	3%	50%	\$1.08	3	6	http://www.greenyour.com/office/of-ice-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	New	2.11	10	\$275.00	15%	25%	\$0.04	0	0	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	53.94	6	-\$1.98	100%	at stock turnover	-\$0.01	0	1	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	27.08	14	\$6.63	100%	at stock turnover	\$0.01	71	39	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	2,414.16	14	\$1,261.09	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	Existing	139.14	1	\$12.00	0%	26%	\$0.05	93	105	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	134.12	20	\$182.30	2%	80%	\$0.12	264	285	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	1,680.40	18	\$419.03	29%	75%	\$0.03	1,892	1,892	Developed from RTF "ResSFductSealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	Existing	2,537.08	15	\$3,713.00	0%	75%	\$0.15	401	418	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	46%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	Existing	-179.90	20	\$2,564.40	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	Existing	919.79	10	\$275.00	15%	25%	\$0.04	242	247	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	611.27	25	\$281.59	66%	75%	\$0.04	142	148	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-30	Installation	Existing	1,228.72	25	\$657.04	19%	75%	\$0.05	1,803	1,874	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	Existing	439.29	20	\$640.82	48%	60%	\$0.12	122	133	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	Existing	805.41	25	\$782.19	36%	60%	\$0.08	489	523	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	Existing	160.84	25	\$938.00	15%	75%	\$0.46	243	266	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,468.32	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$2,931.98	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$9,768.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	-89.33	25	\$788.57	7%	75%	\$0.44	-152	-167	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	2,064.30	25	\$4,558.10	9%	45%	\$0.20	559	559	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	1,330.15	14	\$1,031.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	New	139.46	1	\$12.00	0%	26%	\$0.06	36	36	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	133.65	20	\$39.50	0%	45%	\$0.03	45	45	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	1,114.89	18	\$419.03	8%	20%	\$0.04	97	97	Developed from RTF "ResSFDuctSealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	New	2,492.75	15	\$3,713.00	0%	75%	\$0.15	96	96	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	49%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	New	-322.00	20	\$2,156.71	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	New	862.32	10	\$275.00	15%	25%	\$0.04	65	65	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$281.59	75%	75%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-49	Installation	New	779.60	25	\$657.04	34%	45%	\$0.08	64	64	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	New	714.92	20	\$640.82	27%	45%	\$0.09	90	90	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	New	789.05	25	\$1,564.37	40%	45%	\$0.18	31	31	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	New	212.64	25	\$938.00	9%	45%	\$0.35	57	57	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	New	169.26	25	\$3,468.32	38%	45%	\$1.84	9	9	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	New	472.66	25	\$2,931.98	15%	20%	\$0.54	18	18	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$9,768.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	-39.69	25	\$788.57	33%	45%	\$0.29	-4	-4	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.88	1	\$12.00	0%	26%	\$0.05	4	15	OPower
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	Existing	4.77	10	\$275.00	15%	25%	\$0.04	4	8	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	41.30	8	\$133.36	0%	10%	\$0.31	34	91	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.35	20	\$0.85	100%	at stock turnover	-\$0.32	21	22	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	24.17	6	-\$4.00	100%	at stock turnover	-\$0.05	0	65	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	12.14	14	\$4.45	100%	at stock turnover	\$0.02	727	824	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	19.15	6	-\$0.42	100%	at stock turnover	-\$0.02	0	33	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	9.61	14	\$4.95	100%	at stock turnover	-\$0.04	767	480	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	42.43	25	\$4,558.10	9%	45%	\$0.20	43	69	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	1.80	1	\$12.00	0%	26%	\$0.06	2	3	OPower
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	New	4.57	10	\$275.00	15%	25%	\$0.04	1	2	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	39.49	8	\$133.36	0%	10%	\$0.32	9	16	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.35	20	\$0.85	100%	at stock turnover	-\$0.32	10	10	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	24.17	6	-\$4.00	100%	at stock turnover	-\$0.05	0	6	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	12.14	14	\$4.45	100%	at stock turnover	\$0.02	317	174	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	19.88	6	-\$0.42	100%	at stock turnover	-\$0.02	0	3	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	9.98	14	\$4.95	100%	at stock turnover	-\$0.05	321	128	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	3.71	1	\$12.00	0%	26%	\$0.05	19	23	OPower
Manufactured Home	Miscellaneous	Furnace Fan - ECM	Installation	Existing	62.92	20	\$98.65	79%	at stock turnover	\$0.15	147	149	Illinois TRM
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	8%	at stock turnover	\$0.22	51	50	WAPA Fact Sheet
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	4.06	1	\$12.00	0%	26%	\$0.06	8	9	OPower
Manufactured Home	Miscellaneous	Furnace Fan - ECM	Installation	New	62.92	20	\$98.65	79%	at stock turnover	\$0.15	70	71	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	12%	at stock turnover	\$0.22	33	33	WAPA Fact Sheet
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	36.56	1	\$12.00	0%	26%	\$0.05	30	39	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	274.95	40	\$478.25	1%	5%	\$0.13	34	39	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	217.05	9	\$8.00	28%	50%	\$0.01	307	378	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	201.30	10	\$26.82	41%	75%	\$0.02	425	531	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	118.72	15	\$30.00	11%	75%	\$0.03	236	300	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	Existing	1,377.24	20	\$5,783.33	0%	30%	\$0.37	1,279	1,483	6th Plan
Manufactured Home	Water Heating	Water Heater - Timer	Installation	Existing	58.93	5	\$121.01	15%	75%	\$0.39	101	148	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,625.75	16	\$1,000.97	58%	at stock turnover	\$0.07	1,982	2,005	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	New	34.87	1	\$12.00	0%	26%	\$0.06	11	12	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	270.91	40	\$478.25	1%	10%	\$0.13	22	25	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	New	203.02	9	\$8.00	28%	50%	\$0.01	79	92	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	189.44	10	\$26.82	42%	75%	\$0.02	110	129	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	New	112.76	15	\$30.00	11%	75%	\$0.03	64	75	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	New	1,307.50	20	\$5,783.33	0%	30%	\$0.38	348	406	6th Plan
Manufactured Home	Water Heating	Water Heater - Timer	Installation	New	55.82	5	\$121.01	15%	75%	\$0.39	29	34	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,625.75	16	\$1,000.97	62%	at stock turnover	\$0.07	1,001	1,010	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.21	1	\$12.00	0%	26%	\$0.13	40	46	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	223.32	14	\$306.84	40%	at stock turnover	\$0.17	163	163	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.47	14	\$262.41	51%	at stock turnover	\$0.92	88	83	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	9.13	15	\$6.92	46%	at stock turnover	\$0.09	31	29	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	900.84	5	\$105.00	0%	5%	\$0.01	47	59	PacifiCorp Program Data
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.43	21	\$12.44	19%	at stock turnover	\$0.01	21	21	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	100%	at stock turnover	\$1.24	25	24	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	97.07	17	\$71.90	100%	at stock turnover	\$0.08	72	72	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,020.17	7	\$105.00	0%	75%	\$0.01	137	164	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	164.85	17	\$76.00	3%	at stock turnover	\$0.05	7	7	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	Existing	0.91	17	\$112.36	88%	at stock turnover	\$13.90	2	2	DOE Report
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	New	5.14	1	\$12.00	0%	26%	\$0.16	15	15	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	223.32	14	\$306.84	64%	at stock turnover	\$0.17	109	109	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.47	14	\$262.41	51%	at stock turnover	\$0.92	36	34	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	9.13	15	\$6.92	55%	at stock turnover	\$0.09	14	13	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	New	689.26	5	\$105.00	0%	5%	\$0.02	1	1	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.43	21	\$12.44	2%	at stock turnover	\$0.01	1	1	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	100%	at stock turnover	\$1.24	11	10	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	97.07	17	\$71.90	100%	at stock turnover	\$0.08	32	32	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	845.87	7	\$105.00	0%	75%	\$0.02	101	105	PacificCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	164.85	17	\$76.00	9%	at stock turnover	\$0.05	10	10	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	New	0.91	17	\$112.36	77%	at stock turnover	\$13.90	1	1	DOE Report
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	49.00	14	\$379.20	7%	at stock turnover	\$0.05	29	28	BEST Simulation
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	29.96	5	\$500.00	2%	10%	\$3.37	7	8	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	Existing	5.24	1	\$12.00	0%	26%	\$0.13	4	5	OPower
Multifamily	Cooling	Ceiling Fan - Installation	Installation	Existing	38.28	10	\$295.58	40%	75%	\$1.00	37	43	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	32.83	2	\$175.00	1%	75%	\$2.56	36	41	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	43.66	14	\$360.85	21%	at stock turnover	\$1.03	22	21	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	Existing	30.80	2	\$175.00	0%	75%	\$1.12	16	18	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	0.00	14	-\$265.25	0%	at stock turnover	\$10.00	0	0	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	Existing	0.00	15	\$882.00	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	0.00	20	\$182.30	74%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	4.97	18	\$419.03	30%	75%	\$7.81	5	6	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	190.41	15	\$3,713.00	1%	75%	\$0.44	94	99	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	77.64	15	\$95.60	0%	at stock turnover	\$0.00	0	0	New Buildings Institute Study, 2006

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Geothermal Heat Pump - EER 30 / COP 5.0 Ductless, Var.Ref.Flow	Installation	Existing	70.18	20	\$1,000.72	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	Existing	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.00	25	\$181.02	50%	75%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-30	Installation	Existing	0.00	25	\$422.38	26%	75%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	Existing	4.96	20	\$640.82	2%	60%	\$11.39	6	8	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	Existing	30.36	25	\$502.83	13%	60%	\$0.20	43	47	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	Existing	0.00	30	\$603.00	15%	75%	\$0.00	0	0	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$389.54	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$329.30	15%	15%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Room AC - EER 11.5	Installation	Existing	19.21	12	\$360.19	7%	at stock turnover	\$2.55	4	4	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	Existing	118.15	8	\$49.00	0%	50%	\$0.07	42	42	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Whole-House Fan - Installation	Installation	Existing	29.86	5	\$698.88	2%	10%	\$4.71	7	8	PG&E Document "PGECHOVC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$794.97	26%	75%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	65.09	20	\$362.27	33%	75%	\$0.52	78	90	DEER
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	41.61	25	\$4,558.10	9%	45%	\$0.87	21	22	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	44.74	14	\$336.64	1%	at stock turnover	\$0.08	1	1	BEST Simulation
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	25.49	5	\$500.00	2%	10%	\$3.85	3	3	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	New	4.47	1	\$12.00	0%	26%	\$0.16	2	2	OPower

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Ceiling Fan - Installation	Installation	New	29.86	10	\$295.58	40%	75%	\$1.27	15	15	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	28.86	2	\$175.00	1%	75%	\$2.80	26	27	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	38.61	14	\$370.87	60%	at stock turnover	\$1.19	56	54	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	New	28.28	2	\$175.00	0%	75%	\$2.86	0	1	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	0.00	14	-\$275.28	0%	at stock turnover	\$10.00	0	0	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	New	0.00	15	\$783.00	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	1.86	18	\$419.03	8%	20%	\$20.03	0	0	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	New	179.71	15	\$3,713.00	6%	75%	\$0.60	20	20	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	85.41	15	\$95.60	0%	at stock turnover	\$0.00	0	0	New Buildings Institute Study, 2006
Multifamily	Cooling	Geothermal Heat Pump - EER 30 / COP 5.0 Ductless, Var.Ref.Flow	Installation	New	71.21	20	\$888.38	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	New	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$181.02	73%	75%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-49	Installation	New	0.00	25	\$422.38	10%	45%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	New	3.63	20	\$640.82	8%	45%	\$14.99	2	2	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	New	25.86	25	\$1,005.67	18%	45%	\$0.53	10	10	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	New	0.77	45	\$1,276.53	26%	45%	\$0.80	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	New	0.00	30	\$603.00	9%	45%	\$0.00	0	0	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$389.54	45%	45%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	New	0.00	25	\$329.30	15%	20%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Room AC - EER 11.5	Installation	New	17.99	12	\$370.20	6%	at stock turnover	\$2.80	1	1	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	New	105.38	8	\$49.00	0%	50%	\$0.08	9	9	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable -	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
		Programmable Thermostat											
Multifamily	Cooling	Whole-House Fan - Installation	Installation	New	25.36	5	\$698.88	2%	10%	\$5.38	3	3	PG&E Document "PGEHVC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$794.97	22%	45%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	65.22	20	\$362.27	14%	20%	\$0.53	6	6	DEER
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.54	1	\$12.00	0%	26%	\$0.13	24	30	OPower
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	2.95	5	\$9.25	15%	50%	\$0.72	186	221	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.95	5	\$33.39	1%	2%	\$0.54	4	4	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	Existing	468.90	4	\$0.11	36%	at stock turnover	\$0.00	75	99	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	Existing	22.17	8	\$0.02	36%	at stock turnover	\$0.00	4	4	ENERGY STAR Calc
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	Existing	166.51	5	\$0.02	36%	at stock turnover	\$0.00	175	196	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	23.92	5	\$0.02	53%	at stock turnover	\$0.00	6	7	ENERGY STAR Calc
Multifamily	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	5.50	5	\$13.05	116%	at stock turnover	\$0.00	33	48	NCTA Agreement
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	83.32	10	\$32.89	152%	at stock turnover	\$0.06	171	153	PG&E Document "PGEHAPP104 Energy Efficient Televisions"
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	New	1.53	1	\$12.00	0%	26%	\$0.16	11	12	OPower
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	3.08	5	\$9.25	15%	50%	\$0.71	66	71	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	1	1	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	New	323.88	4	\$0.07	51%	at stock turnover	\$0.00	38	44	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	New	15.52	8	\$0.01	51%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	New	126.26	5	\$0.01	47%	at stock turnover	\$0.00	82	85	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	18.14	5	\$0.01	70%	at stock turnover	\$0.00	3	3	ENERGY STAR Calc
Multifamily	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	6.03	5	\$14.29	145%	at stock turnover	\$0.00	15	17	NCTA Agreement

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	New	91.23	10	\$36.02	190%	at stock turnover	\$0.06	87	81	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.90	1	\$12.00	0%	26%	\$0.13	1	3	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	10.22	8	\$35.91	1%	50%	\$0.34	16	49	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	8.99	12	\$252.77	1%	30%	\$1.94	8	26	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	9.76	5	\$63.53	1%	50%	\$0.85	15	47	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	Existing	2.17	10	\$275.00	15%	25%	\$0.41	1	1	BEST Simulation
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	59.87	6	-\$2.02	100%	at stock turnover	-\$0.01	0	18	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	30.06	14	\$6.75	100%	at stock turnover	\$0.01	205	233	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.93	1	\$12.00	0%	26%	\$0.15	0	1	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	10.60	8	\$35.91	0%	45%	\$0.35	5	9	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	7.82	12	\$252.77	1%	30%	\$2.39	2	4	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	10.13	5	\$63.53	0%	50%	\$0.88	5	9	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	New	2.14	10	\$275.00	15%	25%	\$0.87	0	0	BEST Simulation
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	59.97	6	-\$2.02	100%	at stock turnover	-\$0.01	0	2	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	30.11	14	\$6.75	100%	at stock turnover	\$0.01	101	55	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	408.81	14	\$184.38	7%	at stock turnover	\$0.05	239	236	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	Existing	36.83	1	\$12.00	0%	26%	\$0.13	41	47	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	Existing	40.87	2	\$175.00	0%	75%	\$1.12	21	24	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	123.08	20	\$182.30	74%	80%	\$0.15	34	36	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	0.00	18	\$419.03	30%	75%	\$0.00	0	0	Developed from RTF "ResSF Duct Sealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	Existing	719.55	15	\$3,713.00	1%	75%	\$0.44	1,590	1,683	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	7%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Geothermal Heat Pump - EER 30 / COP 5.0 Ductless, Var.Ref.Flow	Installation	Existing	217.27	20	\$749.86	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	Existing	83.25	10	\$275.00	15%	25%	\$0.41	34	37	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	294.02	25	\$181.02	50%	75%	\$0.06	315	334	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-30	Installation	Existing	274.69	25	\$422.38	26%	75%	\$0.15	565	607	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	Existing	0.00	20	\$640.82	2%	60%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	Existing	206.49	25	\$502.83	13%	60%	\$0.20	407	448	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	Existing	141.61	30	\$603.00	15%	75%	\$0.37	349	390	ORNL.gov Calculator
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$389.54	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$329.30	15%	15%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$2,937.19	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$794.97	26%	75%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	365.40	25	\$4,558.10	9%	45%	\$0.87	151	151	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	216.31	14	\$159.12	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	New	28.00	1	\$12.00	0%	26%	\$0.16	11	11	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	0%	75%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	0.00	18	\$419.03	8%	20%	\$0.00	0	0	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	New	511.86	15	\$3,713.00	6%	75%	\$0.60	283	283	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	19%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Geothermal Heat Pump - EER 30 / COP 5.0 Ductless, Var.Ref.Flow	Installation	New	181.06	20	\$665.69	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	New	32.01	10	\$275.00	15%	25%	\$0.88	4	4	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	262.04	25	\$181.02	73%	75%	\$0.07	7	7	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-49	Installation	New	101.91	25	\$422.38	10%	45%	\$0.41	41	41	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	New	0.00	20	\$640.82	8%	45%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	New	156.33	25	\$1,005.67	18%	45%	\$0.53	49	49	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	New	120.34	45	\$1,276.53	26%	45%	\$0.80	26	26	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	New	198.70	30	\$603.00	9%	45%	\$0.29	83	83	ORNL.gov Calculator
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$389.54	45%	45%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	New	321.19	25	\$329.30	15%	20%	\$0.10	19	19	BEST Simulation
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$2,937.19	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$794.97	22%	45%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Multifamily	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.12	1	\$12.00	0%	26%	\$0.13	3	12	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	Existing	2.82	10	\$275.00	15%	25%	\$0.41	3	6	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	26.98	8	\$55.26	0%	10%	\$0.21	29	74	DEER
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.93	20	\$0.85	100%	at stock turnover	-\$0.22	17	18	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	22.88	6	-\$3.96	100%	at stock turnover	-\$0.05	0	61	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	11.49	14	\$4.40	100%	at stock turnover	\$0.02	687	778	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	15.80	6	-\$0.42	100%	at stock turnover	-\$0.03	0	8	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	7.93	14	\$4.92	100%	at stock turnover	-\$0.05	195	122	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	30.73	25	\$4,558.10	9%	45%	\$0.86	39	63	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	1.19	1	\$12.00	0%	26%	\$0.15	1	2	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	New	3.01	10	\$275.00	15%	25%	\$0.87	1	2	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	28.66	8	\$55.26	2%	10%	\$0.21	8	13	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.93	20	\$0.85	100%	at stock turnover	-\$0.22	9	10	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	22.88	6	-\$3.96	100%	at stock turnover	-\$0.05	0	6	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	11.49	14	\$4.40	100%	at stock turnover	\$0.02	339	185	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	16.40	6	-\$0.42	100%	at stock turnover	-\$0.03	0	1	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	8.24	14	\$4.92	100%	at stock turnover	-\$0.06	92	37	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	1.88	1	\$12.00	0%	26%	\$0.13	10	11	OPower
Multifamily	Miscellaneous	Furnace Fan - ECM	Installation	Existing	40.11	20	\$98.65	40%	at stock turnover	\$0.24	61	62	Illinois TRM
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	1.99	1	\$12.00	0%	26%	\$0.16	4	4	OPower
Multifamily	Miscellaneous	Furnace Fan - ECM	Installation	New	40.11	20	\$98.65	40%	at stock turnover	\$0.24	29	29	Illinois TRM
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	28.66	1	\$12.00	0%	26%	\$0.13	28	39	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	258.72	40	\$478.25	1%	5%	\$0.14	39	46	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	178.57	9	\$8.00	12%	50%	\$0.01	519	652	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	162.36	10	\$13.41	18%	75%	\$0.01	703	902	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	93.12	15	\$30.00	11%	75%	\$0.03	224	296	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	Existing	1,063.86	20	\$5,783.33	1%	30%	\$0.46	1,151	1,357	6th Plan
Multifamily	Water Heating	Water Heater - Timer	Installation	Existing	59.74	5	\$121.01	15%	75%	\$0.39	134	180	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,354.20	16	\$1,000.97	52%	at stock turnover	\$0.09	1,884	1,906	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	4%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	New	26.25	1	\$12.00	0%	26%	\$0.16	6	7	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	247.55	40	\$478.25	1%	10%	\$0.14	14	16	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	New	161.87	9	\$8.00	8%	50%	\$0.01	85	99	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	148.00	10	\$13.41	13%	75%	\$0.01	117	136	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	New	85.55	15	\$30.00	11%	75%	\$0.03	34	40	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	New	978.98	20	\$5,783.33	1%	30%	\$0.48	178	207	6th Plan
Multifamily	Water Heating	Water Heater - Timer	Installation	New	56.68	5	\$121.01	15%	75%	\$0.41	21	25	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,354.20	16	\$1,000.97	31%	at stock turnover	\$0.09	530	535	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	4%	at stock turnover	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.61	1	\$12.00	0%	26%	\$0.04	332	409	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	208.60	14	\$306.84	83%	at stock turnover	\$0.18	1,748	1,747	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	36.13	14	\$262.41	99%	at stock turnover	\$0.90	920	864	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	7.95	15	\$6.92	76%	at stock turnover	\$0.10	245	229	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	900.84	5	\$105.00	0%	5%	\$0.01	1,057	1,322	PacifiCorp Program Data
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.43	21	\$12.44	77%	at stock turnover	\$0.01	463	467	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	97%	at stock turnover	\$1.24	140	133	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	97.07	17	\$71.90	100%	at stock turnover	\$0.08	395	398	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,020.17	7	\$105.00	0%	75%	\$0.01	7,385	8,835	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	164.85	17	\$76.00	29%	at stock turnover	\$0.05	401	404	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	Existing	1.26	17	\$112.36	79%	at stock turnover	\$10.04	13	13	DOE Report
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	New	5.04	1	\$12.00	0%	26%	\$0.05	109	111	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	208.60	14	\$306.84	82%	at stock turnover	\$0.18	719	718	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	New	36.13	14	\$262.41	100%	at stock turnover	\$0.90	375	355	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	7.95	15	\$6.92	91%	at stock turnover	\$0.10	102	96	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	New	689.27	5	\$105.00	0%	5%	\$0.02	192	200	PacifiCorp Program Data
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.43	21	\$12.44	60%	at stock turnover	\$0.01	152	152	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	97%	at stock turnover	\$1.24	61	58	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	97.07	17	\$71.90	100%	at stock turnover	\$0.08	177	178	Developed from RTF "ResRefrigerators" v2.2 (4/2013)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	845.87	7	\$105.00	0%	75%	\$0.02	1,364	1,422	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	164.85	17	\$76.00	22%	at stock turnover	\$0.05	135	136	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	New	1.26	17	\$112.36	66%	at stock turnover	\$10.04	5	6	DOE Report
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	188.98	14	\$1,458.58	2%	at stock turnover	\$0.05	173	171	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	69.14	5	\$500.00	15%	40%	\$1.23	225	308	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	Existing	14.42	1	\$12.00	0%	26%	\$0.04	65	72	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	Existing	108.11	10	\$295.58	40%	75%	\$0.36	604	688	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	102.50	2	\$175.00	7%	75%	\$0.69	365	463	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	128.26	14	\$419.96	16%	at stock turnover	\$0.41	471	406	BEST Simulation
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	568.28	14	-\$240.46	5%	at stock turnover	-\$0.64	91	75	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	Existing	137.27	15	\$867.73	15%	75%	\$0.59	1,202	1,483	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	7.58	20	\$182.30	43%	80%	\$0.13	45	53	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	65.18	20	\$601.43	30%	75%	\$0.03	222	238	Developed from RTF "ResSFDuctSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	355.12	15	\$3,713.00	1%	75%	\$0.10	1,999	2,079	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	188.14	15	\$179.51	5%	at stock turnover	\$0.11	74	82	New Buildings Institute Study, 2006
Single Family	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	58.06	20	\$962.30	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	Existing	75.09	10	\$275.00	15%	25%	\$0.03	129	137	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.29	45	\$339.92	34%	75%	\$0.05	2	2	Developed from RTF "SFwx" v2.4 7/2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Insulation - Ceiling - R-30	Installation	Existing	28.58	45	\$793.14	43%	75%	\$0.08	157	171	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	Existing	42.35	20	\$640.82	52%	60%	\$0.10	25	27	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	Existing	77.54	45	\$1,642.93	49%	60%	\$0.11	136	159	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	Existing	27.35	30	\$1,132.30	15%	75%	\$0.55	257	309	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,564.58	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,013.35	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Room AC - Evaporative Room AC	Installation	Existing	283.11	12	\$289.29	15%	at stock turnover	\$0.14	244	247	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	Existing	116.41	8	\$49.00	0%	50%	\$0.07	455	464	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	Existing	68.47	5	\$698.88	15%	40%	\$1.72	220	305	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	359.40	45	\$2,666.71	33%	75%	\$0.59	2,354	2,846	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	148.36	20	\$1,215.22	15%	75%	\$0.64	1,236	1,702	DEER
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	39.08	25	\$4,558.10	9%	45%	\$0.16	47	48	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	172.02	14	\$1,294.85	2%	at stock turnover	\$0.08	84	84	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	97.81	5	\$500.00	15%	40%	\$0.95	80	83	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	New	18.35	1	\$12.00	0%	26%	\$0.05	21	22	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	New	122.36	10	\$295.58	40%	75%	\$0.31	142	147	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	102.13	2	\$175.00	7%	75%	\$0.73	172	176	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	135.90	14	\$379.77	22%	at stock turnover	\$0.35	400	387	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	0.00	14	-\$221.51	0%	at stock turnover	\$10.00	0	0	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	New	215.58	15	\$770.33	9%	45%	\$0.36	257	266	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	1.68	20	\$39.50	20%	45%	\$0.04	1	1	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	30.46	20	\$601.43	8%	20%	\$0.05	11	11	Developed from RTF "ResSFductSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	New	379.68	15	\$3,713.00	1%	75%	\$0.11	133	136	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	206.96	15	\$158.26	0%	at stock turnover	\$0.00	0	0	New Buildings Institute Study, 2006
Single Family	Cooling	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	New	209.74	20	\$1,708.55	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	New	89.06	10	\$275.00	15%	25%	\$0.03	30	31	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	-2.51	45	\$339.92	71%	75%	\$0.05	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Ceiling - R-49	Installation	New	15.50	45	\$793.14	18%	45%	\$0.13	14	14	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	New	42.82	20	\$640.82	45%	45%	\$0.07	1	1	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	New	102.64	45	\$2,587.14	45%	45%	\$0.20	1	1	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	New	3.27	45	\$1,276.53	4%	45%	\$0.13	4	5	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	New	35.99	30	\$1,132.30	9%	45%	\$0.46	43	44	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,564.58	45%	45%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	New	33.32	25	\$3,013.35	2%	20%	\$0.43	20	21	BEST Simulation
Single Family	Cooling	Room AC - Evaporative Room AC	Installation	New	177.53	12	\$289.29	3%	at stock turnover	\$0.22	19	20	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	New	103.61	8	\$49.00	0%	50%	\$0.08	25	25	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	New	96.33	5	\$698.88	15%	40%	\$1.33	79	82	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	572.14	45	\$2,666.71	28%	45%	\$0.31	323	334	Developed from RTF "SFwx" v2.4 7/2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	232.06	20	\$1,215.22	4%	20%	\$0.44	122	127	DEER
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.71	1	\$12.00	0%	26%	\$0.04	227	272	OPower
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	6.10	5	\$17.37	15%	50%	\$0.66	3,255	3,760	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.95	5	\$33.39	1%	2%	\$0.54	24	24	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	Existing	126.99	4	\$0.03	35%	at stock turnover	\$0.00	409	543	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	Existing	10.45	8	\$0.01	103%	at stock turnover	\$0.00	69	65	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	Existing	78.46	5	\$0.01	103%	at stock turnover	\$0.00	2,791	3,129	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	14.91	5	\$0.01	103%	at stock turnover	\$0.00	63	71	ENERGY STAR Calc
Single Family	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	3.53	5	\$8.38	162%	at stock turnover	\$0.00	252	364	NCTA Agreement
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	55.41	10	\$21.37	231%	at stock turnover	\$0.06	1,462	1,308	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	New	1.60	1	\$12.00	0%	26%	\$0.05	88	95	OPower
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	6.00	5	\$17.37	15%	50%	\$0.68	1,016	1,098	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	7	7	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	New	76.76	4	\$0.02	58%	at stock turnover	\$0.00	239	276	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	New	12.92	8	\$0.01	83%	at stock turnover	\$0.00	20	18	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	New	95.94	5	\$0.01	84%	at stock turnover	\$0.00	817	845	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	10.13	5	\$0.01	152%	at stock turnover	\$0.00	33	34	ENERGY STAR Calc
Single Family	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	3.75	5	\$8.89	202%	at stock turnover	\$0.00	113	130	NCTA Agreement
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	New	58.80	10	\$22.68	289%	at stock turnover	\$0.06	747	694	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	2.42	1	\$12.00	0%	26%	\$0.04	11	48	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	27.51	8	\$104.30	8%	50%	\$0.37	203	617	http://www.greenyour.com/office/of fice-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	24.41	12	\$734.23	1%	30%	\$2.09	118	387	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	26.48	5	\$184.53	2%	50%	\$0.91	220	694	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	Existing	6.13	10	\$275.00	15%	25%	\$0.03	11	23	BEST Simulation
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	54.92	6	-\$1.98	100%	at stock turnover	-\$0.01	0	270	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	27.58	14	\$6.63	100%	at stock turnover	\$0.01	3,035	3,442	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	2.23	1	\$12.00	0%	26%	\$0.05	4	8	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	25.34	8	\$104.30	3%	45%	\$0.43	59	109	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	18.77	12	\$734.23	1%	30%	\$2.90	30	54	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	24.27	5	\$184.53	0%	50%	\$1.07	66	122	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	New	5.65	10	\$275.00	15%	25%	\$0.03	3	6	BEST Simulation
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	55.01	6	-\$1.98	100%	at stock turnover	-\$0.01	0	25	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	27.62	14	\$6.63	100%	at stock turnover	\$0.01	1,334	730	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	3,298.11	14	\$1,481.31	2%	at stock turnover	\$0.05	3,010	2,979	BEST Simulation
Single Family	Heating	Behavioral Programs - Program Participation	Installation	Existing	203.00	1	\$12.00	0%	26%	\$0.04	518	586	OPower

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	119.98	20	\$182.30	43%	80%	\$0.13	402	469	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	2,123.46	20	\$601.43	30%	75%	\$0.03	3,311	3,477	Developed from RTF "ResSF Duct Sealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	Existing	3,961.46	15	\$3,713.00	1%	75%	\$0.10	18,575	18,892	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	6%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	90.39	20	\$1,506.13	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	Existing	1,382.44	10	\$275.00	15%	25%	\$0.03	1,340	1,389	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	578.75	45	\$339.92	34%	75%	\$0.05	2,333	2,465	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-30	Installation	Existing	859.28	45	\$793.14	43%	75%	\$0.08	2,695	2,868	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	Existing	583.48	20	\$640.82	52%	60%	\$0.10	101	106	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	Existing	1,075.09	45	\$1,642.93	49%	60%	\$0.11	1,067	1,241	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	Existing	145.51	30	\$1,132.30	15%	75%	\$0.55	787	921	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,564.58	40%	40%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,013.35	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$10,807.50	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	-17.12	45	\$2,666.71	33%	75%	\$0.59	-65	-76	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	2,474.33	25	\$4,558.10	9%	45%	\$0.16	1,348	1,387	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	1,736.82	14	\$1,278.36	2%	at stock turnover	\$0.08	846	849	BEST Simulation

Measure Data and Assumptions

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Single Family	Heating	Behavioral Programs - Program Participation	Installation	New	174.87	1	\$12.00	0%	26%	\$0.05	90	93	OPower
Single Family	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	106.51	20	\$39.50	20%	45%	\$0.04	40	42	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	1,202.51	20	\$601.43	8%	20%	\$0.05	165	172	Developed from RTF "ResSFductSealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	New	3,581.76	15	\$3,713.00	1%	75%	\$0.11	989	989	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	8%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	New	-411.38	20	\$2,674.13	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	New	1,264.04	10	\$275.00	15%	25%	\$0.03	192	198	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	542.80	45	\$339.92	71%	75%	\$0.05	37	38	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-49	Installation	New	459.91	45	\$793.14	18%	45%	\$0.13	186	191	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	New	874.62	20	\$640.82	45%	45%	\$0.07	3	3	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	New	895.56	45	\$2,587.14	45%	45%	\$0.20	3	3	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	New	827.79	45	\$1,276.53	4%	45%	\$0.13	510	525	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	New	163.43	30	\$1,132.30	9%	45%	\$0.46	89	91	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,564.58	45%	45%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	New	579.86	25	\$3,013.35	2%	20%	\$0.43	162	166	BEST Simulation
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$10,807.50	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	120.27	45	\$2,666.71	28%	45%	\$0.31	31	32	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)

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Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	3.19	1	\$12.00	0%	26%	\$0.04	57	188	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	Existing	8.88	10	\$275.00	15%	25%	\$0.03	55	99	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	77.11	8	\$137.73	0%	10%	\$0.17	469	1,165	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	2.24	20	\$0.85	100%	at stock turnover	-\$0.19	397	423	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	24.91	6	-\$3.94	100%	at stock turnover	-\$0.05	0	740	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	12.51	14	\$4.38	100%	at stock turnover	\$0.02	8,320	9,435	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	12.70	6	-\$0.43	100%	at stock turnover	-\$0.04	0	483	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	6.38	14	\$5.01	100%	at stock turnover	-\$0.06	11,376	7,121	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	79.89	25	\$4,558.10	9%	45%	\$0.16	580	896	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	3.09	1	\$12.00	0%	26%	\$0.05	22	33	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	New	8.60	10	\$275.00	15%	25%	\$0.03	16	26	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	74.59	8	\$137.73	0%	10%	\$0.18	138	223	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	2.24	20	\$0.85	100%	at stock turnover	-\$0.19	186	195	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	24.91	6	-\$3.94	100%	at stock turnover	-\$0.05	0	69	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	12.51	14	\$4.38	100%	at stock turnover	\$0.02	3,650	1,999	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	13.19	6	-\$0.43	100%	at stock turnover	-\$0.04	0	45	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	6.62	14	\$5.01	100%	at stock turnover	-\$0.08	4,781	1,911	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	5.44	1	\$12.00	0%	26%	\$0.04	176	226	OPower
Single Family	Miscellaneous	Furnace Fan - ECM	Installation	Existing	115.61	20	\$98.65	52%	at stock turnover	\$0.08	1,240	1,261	Illinois TRM
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	9%	at stock turnover	\$0.22	422	414	WAPA Fact Sheet
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.07	663	651	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	Existing	1,542.37	20	\$3,682.80	0%	30%	\$0.19	75	121	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	Existing	156.05	10	\$30.00	1%	75%	\$0.03	97	116	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	3%	at stock turnover	\$0.11	389	382	CEC 2000 Appliance Standards
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	5.73	1	\$12.00	0%	26%	\$0.05	71	81	OPower
Single Family	Miscellaneous	Furnace Fan - ECM	Installation	New	115.61	20	\$98.65	52%	at stock turnover	\$0.08	590	599	Illinois TRM
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	10%	at stock turnover	\$0.22	189	185	WAPA Fact Sheet
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.07	292	285	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	New	1,247.27	20	\$3,682.80	0%	30%	\$0.19	16	24	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	New	143.37	10	\$30.00	1%	75%	\$0.03	24	27	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	3%	at stock turnover	\$0.11	171	167	CEC 2000 Appliance Standards
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	39.63	1	\$12.00	0%	26%	\$0.04	184	250	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	Existing	1,163.52	20	\$1,117.41	0%	0%	\$0.09	62	73	Developed from RTF "ResGSHP" v2.2

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	297.87	40	\$600.05	1%	5%	\$0.16	212	249	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	230.75	9	\$16.00	34%	50%	\$0.01	1,346	1,736	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	215.71	10	\$26.82	51%	75%	\$0.02	1,882	2,449	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	128.69	15	\$30.00	11%	75%	\$0.02	1,468	1,933	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	Existing	1,492.08	20	\$5,783.33	1%	30%	\$0.35	7,667	9,059	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	Existing	64.05	5	\$121.01	15%	75%	\$0.36	629	951	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,800.45	16	\$1,000.97	43%	at stock turnover	\$0.06	10,473	10,595	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	6%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	New	37.62	1	\$12.00	0%	26%	\$0.05	39	46	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	New	1,141.05	20	\$1,117.41	0%	0%	\$0.09	10	12	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	292.04	40	\$585.52	1%	10%	\$0.16	81	94	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	New	211.01	9	\$16.00	43%	50%	\$0.01	87	101	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	199.94	10	\$26.82	65%	75%	\$0.02	123	143	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	New	121.65	15	\$30.00	11%	75%	\$0.03	239	278	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	New	1,409.45	20	\$5,783.33	1%	30%	\$0.37	1,253	1,459	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	New	60.41	5	\$121.01	15%	75%	\$0.38	110	128	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,800.44	16	\$1,000.97	26%	at stock turnover	\$0.06	3,256	3,283	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	5%	at stock turnover	\$10.00	0	0	BEST Simulation

Utah Residential Measure Assumptions

Table H-3 Table of Utah Residential Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.76	1	\$12.00	0%	37%	\$0.06	204	244	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	235.81	14	\$306.84	79%	at stock turnover	\$0.09	855	854	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.90	14	\$262.41	99%	at stock turnover	\$0.56	450	422	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	7.79	15	\$6.92	79%	at stock turnover	\$0.07	117	109	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	835.04	5	\$95.00	0%	10%	\$0.01	736	929	PacifiCorp Program Data
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.43	21	\$12.44	64%	at stock turnover	\$0.01	182	184	Developed from RTF "ResFreezer" v2.2 (11/2012)
Manufactured Home	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	99%	at stock turnover	\$0.81	63	60	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	118.41	17	\$71.90	100%	at stock turnover	\$0.05	241	243	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,171.24	7	\$95.00	0%	65%	\$0.01	2,684	2,991	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	226.93	17	\$76.00	22%	at stock turnover	\$0.03	198	200	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	Existing	0.89	17	\$112.36	38%	at stock turnover	\$9.36	2	2	DOE Report
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	New	5.38	1	\$12.00	0%	37%	\$0.06	75	77	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	235.81	14	\$306.84	79%	at stock turnover	\$0.09	394	394	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.90	14	\$262.41	99%	at stock turnover	\$0.54	202	192	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	7.79	15	\$6.92	79%	at stock turnover	\$0.07	47	45	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	New	649.53	5	\$95.00	0%	10%	\$0.02	144	151	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.43	21	\$12.44	48%	at stock turnover	\$0.01	61	61	Developed from RTF "ResFreezer" v2.2 (11/2012)
Manufactured Home	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	99%	at stock turnover	\$0.78	30	29	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	118.41	17	\$71.90	100%	at stock turnover	\$0.04	118	119	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	884.83	7	\$95.00	0%	65%	\$0.01	464	487	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	226.93	17	\$76.00	17%	at stock turnover	\$0.02	73	73	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	New	0.89	17	\$112.36	34%	at stock turnover	\$9.17	1	1	DOE Report
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	257.63	14	\$1,254.48	3%	at stock turnover	\$0.04	153	151	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	88.40	5	\$500.00	15%	40%	\$0.32	266	351	Hawaii TRM
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	Existing	17.17	1	\$12.00	0%	37%	\$0.06	95	113	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	Existing	123.20	10	\$295.58	40%	75%	\$0.17	625	690	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	166.46	2	\$175.00	7%	75%	\$0.07	616	732	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	184.69	14	\$390.17	35%	at stock turnover	\$0.16	1,117	962	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	0.00	14	-\$210.88	43%	at stock turnover	\$10.00	0	0	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	Existing	137.29	15	\$1,127.38	15%	75%	\$0.48	1,035	1,311	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	7.61	20	\$182.30	2%	80%	\$0.10	86	97	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	119.15	18	\$419.03	29%	75%	\$0.02	378	406	Developed from RTF "ResFDuctSealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	241.72	15	\$3,913.00	0%	75%	\$0.08	294	139	Developed from RTF DHP_UES v1.5 (under review)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	165.92	15	\$179.29	43%	at stock turnover	\$0.08	351	387	New Buildings Institute Study, 2006
Manufactured Home	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	84.33	20	\$827.64	0%	at stock turnover	\$0.73	3	3	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	Existing	72.53	10	\$275.00	15%	25%	\$0.02	109	116	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	6.61	25	\$339.51	66%	75%	\$0.05	9	10	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-30	Installation	Existing	91.53	25	\$792.20	19%	75%	\$0.05	772	839	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	Existing	76.64	20	\$640.82	48%	60%	\$0.09	62	69	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	Existing	99.07	25	\$943.09	36%	60%	\$0.09	348	386	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	Existing	19.83	25	\$1,130.96	15%	75%	\$0.49	154	201	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,744.86	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,165.76	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	Existing	440.01	12	\$299.24	7%	at stock turnover	\$0.05	34	38	BEST Simulation
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	Existing	113.26	8	\$49.00	0%	50%	\$0.03	42	48	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	Existing	87.52	5	\$698.88	15%	40%	\$0.45	260	348	PG&E Document "PGECOHCVC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	322.18	25	\$841.22	7%	75%	\$0.26	3,110	3,602	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	124.31	20	\$1,110.84	15%	75%	\$0.54	963	1,259	DEER
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	34.28	25	\$4,558.10	15%	75%	\$0.19	71	73	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	232.84	14	\$1,070.70	3%	at stock turnover	\$0.05	67	67	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	107.52	5	\$500.00	15%	40%	\$0.25	91	95	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	New	21.60	1	\$12.00	0%	37%	\$0.06	37	38	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	New	153.50	10	\$295.58	40%	75%	\$0.13	185	192	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	115.56	2	\$175.00	7%	75%	\$0.09	196	201	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	166.98	14	\$333.01	49%	at stock turnover	\$0.15	570	538	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	1,109.84	14	-\$146.39	9%	at stock turnover	\$0.32	52	45	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	New	257.89	15	\$1,000.84	15%	75%	\$0.26	532	552	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	3.89	20	\$39.50	0%	80%	\$0.03	11	11	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	52.04	18	\$419.03	28%	75%	\$0.04	67	69	Developed from RTF "ResSF Duct Sealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	New	247.28	15	\$3,913.00	0%	75%	\$0.08	91	63	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	182.52	15	\$186.62	9%	at stock turnover	\$0.08	35	41	New Buildings Institute Study, 2006
Manufactured Home	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	76.07	20	\$706.39	0%	at stock turnover	\$0.67	1	1	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	New	84.83	10	\$275.00	15%	25%	\$0.02	30	31	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$339.51	75%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-49	Installation	New	79.59	25	\$792.20	57%	75%	\$0.06	50	52	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	New	74.16	20	\$640.82	48%	80%	\$0.07	66	68	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	New	117.03	25	\$1,886.19	66%	75%	\$0.19	35	36	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	New	30.85	25	\$1,130.96	15%	75%	\$0.37	63	65	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	New	1.95	25	\$3,744.86	68%	80%	\$3.56	1	1	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	New	14.93	25	\$3,165.76	15%	20%	\$0.60	3	3	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	New	343.70	12	\$299.24	7%	at stock turnover	\$0.06	14	14	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	New	103.31	8	\$49.00	0%	50%	\$0.04	11	12	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	New	105.90	5	\$698.88	15%	40%	\$0.36	90	93	PG&E Document "PGECOHC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	479.35	25	\$841.22	55%	75%	\$0.14	327	339	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	207.76	20	\$1,110.84	15%	75%	\$0.33	427	442	DEER
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	Existing	2.25	1	\$12.00	0%	37%	\$0.06	140	160	OPower
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	7.29	5	\$17.35	15%	50%	\$0.18	1,266	1,413	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.43	5	\$33.39	1%	2%	\$0.17	7	7	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	Existing	343.22	4	\$0.08	96%	at stock turnover	\$0.00	408	557	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	Existing	16.23	8	\$0.01	80%	at stock turnover	\$0.00	24	23	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	Existing	121.88	5	\$0.01	80%	at stock turnover	\$0.00	786	896	ENERGY STAR Calc
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	18.37	5	\$0.01	78%	at stock turnover	\$0.00	17	20	ENERGY STAR Calc
Manufactured Home	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	8.52	5	\$11.47	56%	at stock turnover	\$0.00	56	84	NCTA Agreement
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	88.68	10	\$24.88	215%	at stock turnover	\$0.02	849	759	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	New	2.26	1	\$12.00	0%	37%	\$0.06	52	56	OPower
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	7.26	5	\$17.35	15%	50%	\$0.18	361	383	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.01	2	2	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	New	237.88	4	\$0.05	72%	at stock turnover	\$0.00	119	139	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	New	15.01	8	\$0.01	80%	at stock turnover	\$0.00	10	9	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	New	110.57	5	\$0.01	80%	at stock turnover	\$0.00	310	326	ENERGY STAR Calc

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	16.67	5	\$0.01	78%	at stock turnover	\$0.00	7	7	ENERGY STAR Calc
Manufactured Home	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	6.75	5	\$9.09	56%	at stock turnover	\$0.00	22	26	NCTA Agreement
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	New	70.30	10	\$19.72	215%	at stock turnover	\$0.02	381	354	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.07	1	\$12.00	0%	37%	\$0.06	3	14	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	12.16	8	\$39.33	7%	50%	\$0.14	45	124	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	10.76	12	\$276.84	1%	30%	\$1.00	25	76	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	11.69	5	\$69.58	0%	50%	\$0.24	49	139	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	Existing	2.71	10	\$275.00	15%	25%	\$0.02	2	5	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	69.51	6	-\$2.47	100%	at stock turnover	\$0.01	0	71	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	34.90	14	\$8.26	100%	at stock turnover	\$0.02	677	811	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	1.06	1	\$12.00	0%	37%	\$0.06	1	3	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	12.06	8	\$39.33	11%	50%	\$0.15	13	24	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	9.00	12	\$276.84	1%	30%	\$1.30	7	13	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	11.60	5	\$69.58	3%	50%	\$0.27	15	28	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	New	2.69	10	\$275.00	15%	25%	\$0.02	1	1	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	69.65	6	-\$2.47	100%	at stock turnover	\$0.01	0	6	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	34.97	14	\$8.26	100%	at stock turnover	\$0.02	321	175	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	2,242.81	14	\$1,259.16	3%	at stock turnover	\$0.04	1,345	1,332	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	Existing	111.91	1	\$12.00	0%	37%	\$0.06	86	107	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	110.55	20	\$182.30	2%	80%	\$0.10	173	202	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	1,268.07	18	\$419.03	29%	75%	\$0.02	1,201	1,288	Developed from RTF "ResSFductSealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	Existing	2,975.28	15	\$3,913.00	0%	75%	\$0.08	211	210	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	8%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	87.36	20	\$1,727.03	0%	at stock turnover	\$0.73	3	3	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	Existing	870.09	10	\$275.00	15%	25%	\$0.02	185	199	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	441.94	25	\$339.51	66%	75%	\$0.05	81	92	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-30	Installation	Existing	1,188.56	25	\$792.20	19%	75%	\$0.05	1,409	1,559	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	Existing	419.68	20	\$640.82	48%	60%	\$0.09	63	68	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	Existing	645.08	25	\$943.09	36%	60%	\$0.09	314	360	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	Existing	134.12	25	\$1,130.96	15%	75%	\$0.49	163	190	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,744.86	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,165.76	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$9,997.50	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	-95.30	25	\$841.22	7%	75%	\$0.26	-130	-152	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	1,578.54	25	\$4,558.10	15%	75%	\$0.19	973	1,006	Developed from RTF - ResNewSFEStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	1,178.94	14	\$1,044.71	3%	at stock turnover	\$0.05	340	342	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	New	107.86	1	\$12.00	0%	37%	\$0.06	54	56	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	112.10	20	\$39.50	0%	80%	\$0.03	93	96	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	761.20	18	\$419.03	28%	75%	\$0.04	356	369	Developed from RTF "ResSFductSealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	New	2,836.54	15	\$3,913.00	0%	75%	\$0.08	62	60	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	16%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	39.89	20	\$1,092.69	0%	at stock turnover	\$0.67	1	1	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	New	822.73	10	\$275.00	15%	25%	\$0.02	85	88	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$339.51	75%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-49	Installation	New	910.75	25	\$792.20	57%	75%	\$0.06	171	177	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	New	564.45	20	\$640.82	48%	80%	\$0.07	141	141	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	New	604.48	25	\$1,886.19	66%	75%	\$0.19	53	55	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	New	165.83	25	\$1,130.96	15%	75%	\$0.37	102	105	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	New	65.29	25	\$3,744.86	68%	80%	\$3.56	8	8	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	New	321.08	25	\$3,165.76	15%	20%	\$0.60	16	17	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$9,997.50	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.p.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	-56.38	25	\$841.22	55%	75%	\$0.14	-11	-12	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.29	1	\$12.00	0%	37%	\$0.06	14	46	OPower
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	Existing	3.26	10	\$275.00	15%	25%	\$0.02	10	17	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	28.22	8	\$140.15	0%	10%	\$0.21	82	191	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.23	20	\$0.54	100%	at stock turnover	\$0.03	60	64	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	15.99	6	-\$2.88	100%	at stock turnover	\$0.01	0	163	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	8.03	14	\$3.20	100%	at stock turnover	\$0.03	1,552	1,860	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	18.08	6	-\$0.36	100%	at stock turnover	\$0.01	0	117	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	9.08	14	\$4.21	100%	at stock turnover	\$0.02	2,314	1,510	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	33.48	25	\$4,558.10	15%	75%	\$0.19	188	307	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	1.32	1	\$12.00	0%	37%	\$0.06	6	10	OPower

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	New	3.36	10	\$275.00	15%	25%	\$0.02	3	5	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	29.02	8	\$140.15	0%	10%	\$0.20	23	41	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.23	20	\$0.54	100%	at stock turnover	\$0.02	31	32	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	15.99	6	-\$2.88	100%	at stock turnover	\$0.01	0	14	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	8.03	14	\$3.20	100%	at stock turnover	\$0.03	735	401	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	18.08	6	-\$0.36	100%	at stock turnover	\$0.01	0	10	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	9.08	14	\$4.21	100%	at stock turnover	\$0.01	1,017	406	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	5.97	1	\$12.00	0%	37%	\$0.06	106	107	OPower
Manufactured Home	Miscellaneous	Furnace Fan - ECM	Installation	Existing	62.92	20	\$98.65	76%	at stock turnover	\$0.12	451	459	Illinois TRM
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	2%	at stock turnover	\$0.14	43	42	WAPA Fact Sheet
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	6.29	1	\$12.00	0%	37%	\$0.06	43	43	OPower
Manufactured Home	Miscellaneous	Furnace Fan - ECM	Installation	New	62.92	20	\$98.65	76%	at stock turnover	\$0.11	235	238	Illinois TRM
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	2%	at stock turnover	\$0.13	20	20	WAPA Fact Sheet

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	32.52	1	\$12.00	0%	37%	\$0.06	32	41	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	264.13	40	\$478.25	1%	5%	\$0.12	27	32	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	193.03	9	\$8.00	28%	50%	\$0.00	228	282	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	179.03	10	\$26.82	41%	75%	\$0.01	316	395	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	105.48	15	\$30.00	11%	75%	\$0.02	176	223	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	Existing	1,207.35	20	\$5,783.33	0%	30%	\$0.32	937	1,088	6th Plan
Manufactured Home	Water Heating	Water Heater - Timer	Installation	Existing	61.00	5	\$121.01	15%	75%	\$0.13	95	122	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,445.49	16	\$1,000.97	15%	at stock turnover	\$0.05	1,475	1,493	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	New	31.09	1	\$12.00	0%	37%	\$0.06	10	12	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	260.91	40	\$478.25	1%	10%	\$0.12	16	19	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	New	181.01	9	\$8.00	28%	50%	\$0.00	54	63	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	168.91	10	\$26.82	42%	75%	\$0.01	75	88	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	New	100.51	15	\$30.00	11%	75%	\$0.02	44	51	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	New	1,151.09	20	\$5,783.33	0%	30%	\$0.32	234	274	6th Plan

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Manufactured Home	Water Heating	Water Heater - Timer	Installation	New	59.97	5	\$121.01	15%	75%	\$0.13	24	29	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,445.49	16	\$1,000.97	14%	at stock turnover	\$0.05	685	691	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.11	1	\$12.00	0%	37%	\$0.13	1,491	1,688	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	168.94	14	\$306.84	78%	at stock turnover	\$0.13	4,974	4,970	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.47	14	\$262.41	89%	at stock turnover	\$0.56	3,414	3,208	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	7.79	15	\$6.92	92%	at stock turnover	\$0.07	1,012	935	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	835.04	5	\$95.00	0%	10%	\$0.01	1,851	2,336	PacifiCorp Program Data
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.30	21	\$12.44	20%	at stock turnover	\$0.01	459	463	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	97%	at stock turnover	\$0.81	520	493	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	117.71	17	\$71.90	100%	at stock turnover	\$0.05	1,962	1,977	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,171.24	7	\$95.00	0%	65%	\$0.01	8,901	9,919	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	226.93	17	\$76.00	9%	at stock turnover	\$0.03	657	662	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	Existing	0.91	17	\$112.36	82%	at stock turnover	\$9.22	37	38	DOE Report
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	New	4.85	1	\$12.00	0%	37%	\$0.15	550	564	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	168.94	14	\$306.84	78%	at stock turnover	\$0.13	2,294	2,292	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.47	14	\$262.41	89%	at stock turnover	\$0.54	1,522	1,448	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	7.79	15	\$6.92	92%	at stock turnover	\$0.07	408	384	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	New	649.56	5	\$95.00	0%	10%	\$0.02	361	379	PacifiCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.30	21	\$12.44	15%	at stock turnover	\$0.01	154	154	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	97%	at stock turnover	\$0.78	246	235	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	117.71	17	\$71.90	100%	at stock turnover	\$0.04	963	967	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	884.77	7	\$95.00	0%	65%	\$0.01	1,538	1,616	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	226.93	17	\$76.00	7%	at stock turnover	\$0.02	243	244	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	New	0.91	17	\$112.36	74%	at stock turnover	\$9.04	18	18	DOE Report
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAlDmT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	135.18	14	\$617.20	4%	at stock turnover	\$0.04	897	888	BEST Simulation
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	76.22	5	\$500.00	2%	10%	\$0.45	712	823	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	Existing	12.62	1	\$12.00	0%	37%	\$0.13	564	651	OPower
Multifamily	Cooling	Ceiling Fan - Installation	Installation	Existing	77.05	10	\$295.58	40%	75%	\$0.28	3,153	3,433	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	87.35	2	\$175.00	1%	75%	\$0.14	6,070	6,747	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	112.48	14	\$547.37	70%	at stock turnover	\$0.37	6,318	5,922	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	Existing	84.99	2	\$175.00	0%	75%	\$0.09	539	600	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	584.27	14	-\$400.58	5%	at stock turnover	\$0.62	299	247	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	Existing	0.00	15	\$1,354.36	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	0.00	20	\$182.30	74%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	13.32	18	\$419.03	30%	75%	\$2.14	591	712	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	145.90	15	\$3,913.00	1%	75%	\$0.22	997	465	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	79.97	15	\$146.79	5%	at stock turnover	\$0.14	137	164	New Buildings Institute Study, 2006

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Multifamily	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	44.14	20	\$407.20	0%	at stock turnover	\$2.25	12	13	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	Existing	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.00	25	\$277.97	50%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-30	Installation	Existing	0.00	25	\$648.59	26%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	Existing	13.27	20	\$640.82	2%	60%	\$3.27	762	921	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	Existing	72.97	25	\$772.13	13%	60%	\$0.21	4,128	4,502	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	Existing	0.00	30	\$925.94	15%	75%	\$0.00	0	0	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$451.10	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$381.34	15%	15%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Room AC - EER 11.5	Installation	Existing	32.05	12	\$334.90	5%	at stock turnover	\$0.77	40	45	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	Existing	117.93	8	\$49.00	0%	50%	\$0.03	251	275	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Whole-House Fan - Installation	Installation	Existing	75.94	5	\$698.88	2%	10%	\$0.63	707	820	PG&E Document "PGECOHC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$1,222.58	26%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	83.92	20	\$557.13	33%	75%	\$0.48	4,060	4,625	DEER
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	37.97	25	\$4,558.10	15%	75%	\$0.73	987	1,027	Developed from RTF - ResNewSFEStarWAIMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	113.41	14	\$522.64	4%	at stock turnover	\$0.06	368	370	BEST Simulation
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	69.90	5	\$500.00	2%	10%	\$0.46	256	267	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	New	12.08	1	\$12.00	0%	37%	\$0.15	258	268	OPower

Measure Data and Assumptions

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Multifamily	Cooling	Ceiling Fan - Installation	Installation	New	77.40	10	\$295.58	40%	75%	\$0.27	1,178	1,225	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	81.47	2	\$175.00	1%	75%	\$0.14	2,343	2,429	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	108.92	14	\$562.58	97%	at stock turnover	\$0.38	5,144	4,968	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	New	67.04	2	\$175.00	0%	75%	\$0.12	134	140	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	572.40	14	-\$415.79	1%	at stock turnover	\$0.63	30	26	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	New	0.00	15	\$1,202.34	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	80%	80%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	5.08	18	\$419.03	30%	75%	\$5.20	95	99	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	New	155.07	15	\$3,913.00	6%	75%	\$0.29	294	199	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	87.96	15	\$146.79	1%	at stock turnover	\$0.13	19	23	New Buildings Institute Study, 2006
Multifamily	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	38.11	20	\$344.81	0%	at stock turnover	\$0.48	5	6	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	New	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$277.97	73%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-49	Installation	New	0.00	25	\$648.59	17%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	New	10.06	20	\$640.82	13%	80%	\$4.04	279	290	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	New	66.88	25	\$1,544.26	30%	75%	\$0.55	1,303	1,355	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	New	8.93	45	\$1,276.53	43%	75%	\$0.67	123	128	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	New	0.00	30	\$925.94	15%	75%	\$0.00	0	0	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$451.10	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	New	0.00	25	\$381.34	15%	20%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Room AC - EER 11.5	Installation	New	32.71	12	\$344.21	5%	at stock turnover	\$0.76	18	19	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	New	105.68	8	\$49.00	0%	50%	\$0.04	65	66	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable -	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation

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		Programmable Thermostat											
Multifamily	Cooling	Whole-House Fan - Installation	Installation	New	69.54	5	\$698.88	2%	10%	\$0.64	255	265	PG&E Document "PGECOHC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$1,222.58	37%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	108.64	20	\$557.13	53%	75%	\$0.38	1,062	1,104	DEER
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.91	1	\$12.00	0%	37%	\$0.13	871	985	OPower
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	5.56	5	\$14.21	15%	50%	\$0.19	7,109	7,845	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.93	5	\$33.39	1%	2%	\$0.17	59	59	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	Existing	468.90	4	\$0.11	110%	at stock turnover	\$0.00	3,820	5,221	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	Existing	22.17	8	\$0.02	63%	at stock turnover	\$0.00	158	147	ENERGY STAR Calc
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	Existing	166.51	5	\$0.02	63%	at stock turnover	\$0.00	5,126	5,838	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	23.92	5	\$0.02	53%	at stock turnover	\$0.00	96	110	ENERGY STAR Calc
Multifamily	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	9.69	5	\$13.05	44%	at stock turnover	\$0.00	359	542	NCTA Agreement
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	85.31	10	\$32.89	189%	at stock turnover	\$0.03	4,437	3,969	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	New	1.91	1	\$12.00	0%	37%	\$0.15	323	340	OPower
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	5.53	5	\$14.21	15%	50%	\$0.19	2,001	2,106	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.01	19	19	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	New	323.88	4	\$0.07	82%	at stock turnover	\$0.00	1,110	1,306	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	New	15.52	8	\$0.01	63%	at stock turnover	\$0.00	62	57	ENERGY STAR Calc
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	New	126.26	5	\$0.01	63%	at stock turnover	\$0.00	2,020	2,122	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	18.14	5	\$0.01	53%	at stock turnover	\$0.00	38	40	ENERGY STAR Calc
Multifamily	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	10.61	5	\$14.29	44%	at stock turnover	\$0.00	141	168	NCTA Agreement

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	New	93.41	10	\$36.02	189%	at stock turnover	\$0.03	1,991	1,850	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.04	1	\$12.00	0%	37%	\$0.13	28	108	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	11.85	8	\$35.91	1%	50%	\$0.13	411	1,120	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	10.41	12	\$252.77	1%	30%	\$0.94	202	599	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	11.32	5	\$63.53	1%	50%	\$0.23	383	1,090	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	Existing	2.51	10	\$275.00	15%	25%	\$0.32	17	35	BEST Simulation
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	76.53	6	-\$2.83	100%	at stock turnover	\$0.01	0	571	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	38.43	14	\$9.46	100%	at stock turnover	\$0.02	5,437	6,513	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	1.18	1	\$12.00	0%	37%	\$0.15	13	24	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	13.39	8	\$35.91	0%	50%	\$0.12	151	278	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	9.85	12	\$252.77	1%	30%	\$1.07	64	117	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	12.73	5	\$63.53	0%	50%	\$0.22	143	262	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	New	2.63	10	\$275.00	15%	25%	\$0.81	6	11	BEST Simulation
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	76.68	6	-\$2.83	100%	at stock turnover	\$0.01	0	57	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	38.50	14	\$9.46	100%	at stock turnover	\$0.02	2,916	1,590	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	430.29	14	\$324.95	4%	at stock turnover	\$0.04	2,884	2,854	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	Existing	34.56	1	\$12.00	0%	37%	\$0.13	363	412	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	Existing	48.52	2	\$175.00	0%	75%	\$0.09	294	340	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	111.57	20	\$182.30	74%	80%	\$0.12	203	220	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	0.00	18	\$419.03	30%	75%	\$0.00	0	0	Developed from RTF "ResSF Duct Sealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	Existing	920.85	15	\$3,913.00	1%	75%	\$0.22	3,123	3,117	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	11%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	11.33	20	\$1,727.03	0%	at stock turnover	\$2.25	3	3	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	Existing	51.51	10	\$275.00	15%	25%	\$0.32	136	153	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	293.37	25	\$277.97	50%	75%	\$0.07	2,079	2,223	Developed from RTF "SFwX" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-30	Installation	Existing	303.13	25	\$648.59	26%	75%	\$0.16	4,120	4,466	Developed from RTF "SFwX" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	Existing	0.00	20	\$640.82	2%	60%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	Existing	192.47	25	\$772.13	13%	60%	\$0.21	2,502	2,782	Developed from RTF "SFwX" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	Existing	124.41	30	\$925.94	15%	75%	\$0.51	1,965	2,291	ORNL.gov Calculator
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$451.10	40%	40%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$381.34	15%	15%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$4,370.94	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$1,222.58	26%	75%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	321.35	25	\$4,558.10	15%	75%	\$0.74	2,480	2,552	Developed from RTF - ResNewSFStarWAIMDT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	220.61	14	\$267.49	4%	at stock turnover	\$0.06	717	721	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	New	24.33	1	\$12.00	0%	37%	\$0.15	155	159	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	New	28.36	2	\$175.00	0%	75%	\$0.12	55	59	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	80%	80%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	0.00	18	\$419.03	30%	75%	\$0.00	0	0	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	New	602.70	15	\$3,913.00	6%	75%	\$0.29	603	567	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	22%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	3.41	20	\$279.77	0%	at stock turnover	\$0.48	0	1	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	New	11.26	10	\$275.00	15%	25%	\$0.86	14	15	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	247.77	25	\$277.97	73%	75%	\$0.09	72	74	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-49	Installation	New	161.94	25	\$648.59	17%	75%	\$0.31	1,217	1,253	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	New	0.00	20	\$640.82	13%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	New	127.79	25	\$1,544.26	30%	75%	\$0.55	740	761	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	New	120.07	45	\$1,276.53	43%	75%	\$0.67	493	508	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	New	167.70	30	\$925.94	15%	75%	\$0.41	1,277	1,332	ORNL.gov Calculator
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$451.10	80%	80%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	New	261.80	25	\$381.34	15%	20%	\$0.11	170	175	BEST Simulation
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$4,370.94	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$1,222.58	37%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIMDT v2.2 (Rev 2/2012, Average used)
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.34	1	\$12.00	0%	37%	\$0.13	120	400	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	Existing	3.39	10	\$275.00	15%	25%	\$0.32	79	141	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	30.10	8	\$73.89	0%	10%	\$0.11	687	1,656	DEER
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	2.21	20	\$0.97	100%	at stock turnover	\$0.02	406	432	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	27.17	6	-\$4.85	100%	at stock turnover	\$0.01	0	1,776	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	13.65	14	\$5.39	100%	at stock turnover	\$0.03	16,918	20,266	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	26.66	6	-\$0.53	100%	at stock turnover	\$0.01	0	343	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	13.39	14	\$6.23	100%	at stock turnover	\$0.02	6,768	4,418	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	39.47	25	\$4,558.10	15%	75%	\$0.72	1,763	2,937	Developed from RTF - ResNewSFStarWAIMDT v2.2 (Rev 2/2012, Average used)
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	1.53	1	\$12.00	0%	37%	\$0.15	57	94	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	New	3.34	10	\$275.00	15%	25%	\$0.81	24	41	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	34.24	8	\$73.89	2%	10%	\$0.10	208	347	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	2.21	20	\$0.97	100%	at stock turnover	\$0.02	234	245	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	27.19	6	-\$4.85	100%	at stock turnover	\$0.01	0	176	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	13.65	14	\$5.39	100%	at stock turnover	\$0.03	9,060	4,939	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	26.66	6	-\$0.53	100%	at stock turnover	\$0.01	0	32	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	13.39	14	\$6.23	100%	at stock turnover	\$0.01	3,364	1,342	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	1.87	1	\$12.00	0%	37%	\$0.13	239	286	OPower
Multifamily	Miscellaneous	Furnace Fan - ECM	Installation	Existing	40.11	20	\$98.65	85%	at stock turnover	\$0.18	2,651	2,696	Illinois TRM
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	1.89	1	\$12.00	0%	37%	\$0.15	94	103	OPower
Multifamily	Miscellaneous	Furnace Fan - ECM	Installation	New	40.11	20	\$98.65	85%	at stock turnover	\$0.18	1,379	1,398	Illinois TRM
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	25.57	1	\$12.00	0%	37%	\$0.13	254	349	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	249.33	40	\$478.25	1%	5%	\$0.12	264	310	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	159.32	9	\$8.00	12%	50%	\$0.00	3,275	4,107	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	144.86	10	\$13.41	18%	75%	\$0.01	4,439	5,680	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	83.05	15	\$30.00	11%	75%	\$0.02	1,414	1,863	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	Existing	946.59	20	\$5,783.33	1%	30%	\$0.38	7,243	8,533	6th Plan
Multifamily	Water Heating	Water Heater - Timer	Installation	Existing	57.56	5	\$121.01	15%	75%	\$0.13	913	1,221	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,204.04	16	\$1,000.97	18%	at stock turnover	\$0.06	11,982	12,122	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	New	23.87	1	\$12.00	0%	37%	\$0.15	82	96	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	243.68	40	\$478.25	1%	10%	\$0.12	154	180	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	New	147.33	9	\$8.00	8%	50%	\$0.00	866	1,014	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	134.70	10	\$13.41	13%	75%	\$0.01	1,184	1,387	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	New	77.87	15	\$30.00	11%	75%	\$0.02	349	409	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	New	888.30	20	\$5,783.33	1%	30%	\$0.40	1,800	2,108	6th Plan
Multifamily	Water Heating	Water Heater - Timer	Installation	New	55.68	5	\$121.01	15%	75%	\$0.13	234	274	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,204.04	16	\$1,000.97	16%	at stock turnover	\$0.06	5,561	5,608	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.82	1	\$12.00	0%	37%	\$0.04	6,014	7,421	OPower

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	208.60	14	\$306.84	74%	at stock turnover	\$0.11	19,376	19,360	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	36.13	14	\$262.41	99%	at stock turnover	\$0.55	12,325	11,578	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	7.79	15	\$6.92	92%	at stock turnover	\$0.07	3,358	3,104	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	835.04	5	\$95.00	0%	10%	\$0.01	20,164	25,450	PacifiCorp Program Data
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.43	21	\$12.44	65%	at stock turnover	\$0.01	5,000	5,044	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	99%	at stock turnover	\$0.81	1,717	1,624	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	118.41	17	\$71.90	100%	at stock turnover	\$0.05	6,547	6,595	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,171.24	7	\$95.00	0%	65%	\$0.01	134,919	150,356	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	226.93	17	\$76.00	41%	at stock turnover	\$0.03	9,963	10,035	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	Existing	1.26	17	\$112.36	70%	at stock turnover	\$6.66	143	147	DOE Report
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	New	5.42	1	\$12.00	0%	37%	\$0.05	2,205	2,259	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	208.60	14	\$306.84	74%	at stock turnover	\$0.10	8,936	8,927	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	New	36.13	14	\$262.41	99%	at stock turnover	\$0.54	5,524	5,244	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	7.79	15	\$6.92	92%	at stock turnover	\$0.07	1,354	1,276	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	New	649.53	5	\$95.00	0%	10%	\$0.02	3,938	4,132	PacifiCorp Program Data
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.43	21	\$12.44	48%	at stock turnover	\$0.01	1,680	1,681	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	99%	at stock turnover	\$0.78	816	776	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	118.41	17	\$71.90	100%	at stock turnover	\$0.04	3,214	3,228	Developed from RTF "ResRefrigerators" v2.2 (4/2013)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	884.80	7	\$95.00	0%	65%	\$0.01	23,312	24,500	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	226.93	17	\$76.00	31%	at stock turnover	\$0.02	3,678	3,694	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	New	1.26	17	\$112.36	63%	at stock turnover	\$6.53	70	71	DOE Report
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	370.64	14	\$1,692.26	3%	at stock turnover	\$0.05	5,281	5,227	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	170.57	5	\$500.00	15%	40%	\$0.19	15,788	19,049	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	Existing	30.59	1	\$12.00	0%	37%	\$0.04	4,862	5,480	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	Existing	187.06	10	\$295.58	40%	75%	\$0.12	27,346	29,369	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	240.26	2	\$175.00	7%	75%	\$0.05	50,699	55,040	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	232.76	14	\$498.91	68%	at stock turnover	\$0.16	47,724	43,755	BEST Simulation
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	1,661.20	14	-\$340.80	16%	at stock turnover	\$0.22	7,192	5,946	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	Existing	152.94	15	\$823.20	15%	75%	\$0.35	34,786	41,020	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	8.93	20	\$182.30	43%	80%	\$0.11	1,384	1,517	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	101.68	20	\$601.43	30%	75%	\$0.04	15,466	16,656	Developed from RTF "ResSFductSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	170.59	15	\$3,913.00	1%	75%	\$0.06	2,404	1,120	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	193.78	15	\$158.10	16%	at stock turnover	\$0.06	2,811	3,311	New Buildings Institute Study, 2006
Single Family	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	121.02	20	\$1,116.46	0%	at stock turnover	\$0.69	129	134	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	Existing	130.21	10	\$275.00	15%	25%	\$0.01	5,535	5,845	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	6.85	45	\$299.39	34%	75%	\$0.04	1,196	1,289	Developed from RTF "SFwX" v2.4 7/2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Insulation - Ceiling - R-30	Installation	Existing	50.29	45	\$698.57	43%	75%	\$0.09	6,819	7,418	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	Existing	66.25	20	\$640.82	52%	60%	\$0.10	1,721	1,880	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	Existing	174.06	45	\$1,447.04	49%	60%	\$0.10	7,999	8,729	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	Existing	29.02	30	\$997.30	15%	75%	\$0.43	6,622	8,142	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$4,131.56	40%	40%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,492.66	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Room AC - Evaporative Room AC	Installation	Existing	303.29	12	\$208.90	3%	at stock turnover	\$0.05	272	305	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	Existing	116.10	8	\$49.00	0%	50%	\$0.03	504	566	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	Existing	163.37	5	\$698.88	15%	40%	\$0.26	14,630	18,224	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	667.96	45	\$3,450.56	33%	75%	\$0.37	112,504	129,709	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	176.23	20	\$1,572.42	15%	75%	\$0.56	38,719	49,795	DEER
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	39.56	25	\$4,558.10	15%	75%	\$0.15	3,424	3,522	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	310.96	14	\$1,432.99	3%	at stock turnover	\$0.07	2,187	2,198	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	154.84	5	\$500.00	15%	40%	\$0.18	5,500	5,656	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	New	30.29	1	\$12.00	0%	37%	\$0.05	2,147	2,207	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	New	193.01	10	\$295.58	40%	75%	\$0.11	9,742	10,020	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	161.58	2	\$175.00	7%	75%	\$0.07	14,258	14,648	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	214.75	14	\$418.62	94%	at stock turnover	\$0.14	34,007	32,754	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	1,484.07	14	-\$228.70	3%	at stock turnover	\$0.24	778	677	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	New	203.34	15	\$730.80	15%	75%	\$0.24	17,496	17,995	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	3.38	20	\$39.50	35%	80%	\$0.03	217	224	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	54.06	20	\$601.43	30%	75%	\$0.06	3,331	3,429	Developed from RTF "ResSFductSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	New	154.64	15	\$3,913.00	1%	75%	\$0.07	649	447	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	213.15	15	\$189.92	3%	at stock turnover	\$0.07	361	434	New Buildings Institute Study, 2006
Single Family	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	104.49	20	\$945.42	0%	at stock turnover	\$0.85	58	60	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	New	127.10	10	\$275.00	15%	25%	\$0.02	1,838	1,890	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	3.78	45	\$299.39	71%	75%	\$0.05	24	25	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Ceiling - R-49	Installation	New	45.46	45	\$698.57	30%	75%	\$0.09	2,924	3,006	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	New	77.16	20	\$640.82	79%	80%	\$0.07	82	85	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	New	170.43	45	\$2,278.67	76%	76%	\$0.18	96	99	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	New	23.60	45	\$1,276.53	7%	75%	\$0.12	2,307	2,372	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	New	36.77	30	\$997.30	15%	75%	\$0.34	3,155	3,245	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$4,131.56	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	New	28.54	25	\$3,492.66	2%	20%	\$0.46	750	771	BEST Simulation
Single Family	Cooling	Room AC - Evaporative Room AC	Installation	New	163.33	12	\$208.90	3%	at stock turnover	\$0.09	92	93	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	New	103.85	8	\$49.00	0%	50%	\$0.04	132	135	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	New	152.50	5	\$698.88	15%	40%	\$0.26	5,410	5,564	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	765.66	45	\$3,450.56	47%	75%	\$0.29	31,217	32,107	Developed from RTF "SFWx" v2.4 7/2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	221.82	20	\$1,572.42	15%	75%	\$0.43	18,979	19,517	DEER
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.91	1	\$12.00	0%	37%	\$0.04	3,851	4,345	OPower
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	5.99	5	\$15.30	15%	50%	\$0.19	33,868	37,286	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.93	5	\$33.39	1%	2%	\$0.17	197	197	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	Existing	126.99	4	\$0.03	128%	at stock turnover	\$0.00	14,764	20,180	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	Existing	10.45	8	\$0.01	96%	at stock turnover	\$0.00	799	743	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	Existing	78.46	5	\$0.01	96%	at stock turnover	\$0.00	25,858	29,447	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	14.91	5	\$0.01	103%	at stock turnover	\$0.00	624	711	ENERGY STAR Calc
Single Family	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	6.22	5	\$8.38	65%	at stock turnover	\$0.00	1,776	2,683	NCTA Agreement
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	55.41	10	\$21.37	245%	at stock turnover	\$0.03	19,096	17,085	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	New	1.90	1	\$12.00	0%	37%	\$0.05	1,432	1,503	OPower
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	5.94	5	\$15.30	15%	50%	\$0.19	9,561	10,038	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.01	64	64	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	New	76.76	4	\$0.02	96%	at stock turnover	\$0.00	4,291	5,046	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	New	12.92	8	\$0.01	96%	at stock turnover	\$0.00	313	285	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	New	95.94	5	\$0.01	96%	at stock turnover	\$0.00	10,190	10,704	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	10.13	5	\$0.01	103%	at stock turnover	\$0.00	246	258	ENERGY STAR Calc
Single Family	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	6.60	5	\$8.89	65%	at stock turnover	\$0.00	700	831	NCTA Agreement
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	New	58.80	10	\$22.68	245%	at stock turnover	\$0.03	8,569	7,961	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	2.30	1	\$12.00	0%	37%	\$0.04	201	792	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	26.12	8	\$104.30	8%	50%	\$0.17	2,557	7,041	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors

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Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	23.15	12	\$734.23	1%	30%	\$1.24	1,488	4,417	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	25.14	5	\$184.53	2%	50%	\$0.30	2,775	7,910	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	Existing	5.83	10	\$275.00	15%	25%	\$0.01	137	268	BEST Simulation
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	57.18	6	-\$2.05	100%	at stock turnover	\$0.01	0	4,153	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	28.71	14	\$6.87	100%	at stock turnover	\$0.02	39,565	47,403	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	2.29	1	\$12.00	0%	37%	\$0.05	84	155	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	26.07	8	\$104.30	3%	50%	\$0.18	921	1,694	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	19.23	12	\$734.23	1%	30%	\$1.60	412	757	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	24.86	5	\$184.53	0%	50%	\$0.33	924	1,699	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	New	5.82	10	\$275.00	15%	25%	\$0.02	44	80	BEST Simulation
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	57.30	6	-\$2.05	100%	at stock turnover	\$0.01	0	367	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	28.77	14	\$6.87	100%	at stock turnover	\$0.02	18,868	10,285	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	2,249.21	14	\$1,698.56	3%	at stock turnover	\$0.05	32,375	32,041	BEST Simulation
Single Family	Heating	Behavioral Programs - Program Participation	Installation	Existing	164.21	1	\$12.00	0%	37%	\$0.04	2,998	3,375	OPower

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	110.24	20	\$182.30	43%	80%	\$0.11	1,924	2,172	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	1,018.37	20	\$601.43	30%	75%	\$0.04	21,331	23,343	Developed from RTF "ResSF Duct Sealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	Existing	4,462.27	15	\$3,913.00	1%	75%	\$0.06	6,388	6,156	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	6%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	59.23	20	\$1,727.03	0%	at stock turnover	\$0.69	63	66	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	Existing	1,303.38	10	\$275.00	15%	25%	\$0.01	6,379	6,768	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	536.42	45	\$299.39	34%	75%	\$0.04	10,765	11,678	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-30	Installation	Existing	532.78	45	\$698.57	43%	75%	\$0.09	8,160	9,116	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	Existing	425.34	20	\$640.82	52%	60%	\$0.10	918	958	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	Existing	905.02	45	\$1,447.04	49%	60%	\$0.10	4,685	5,267	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	Existing	133.69	30	\$997.30	15%	75%	\$0.43	3,772	4,264	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$4,131.56	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,492.66	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$13,458.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	-4.40	45	\$3,450.56	33%	75%	\$0.37	-87	-98	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	1,946.16	25	\$4,558.10	15%	75%	\$0.15	26,602	27,609	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	1,153.18	14	\$1,398.22	3%	at stock turnover	\$0.07	8,110	8,149	BEST Simulation
Single Family	Heating	Behavioral Programs - Program Participation	Installation	New	139.18	1	\$12.00	0%	37%	\$0.05	1,562	1,621	OPower
Single Family	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	101.80	20	\$39.50	35%	80%	\$0.03	1,038	1,077	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	761.83	20	\$601.43	30%	75%	\$0.06	7,658	7,955	Developed from RTF "ResSF Duct Sealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	New	3,571.69	15	\$3,913.00	1%	75%	\$0.07	1,522	1,473	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	12%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	17.81	20	\$1,462.42	0%	at stock turnover	\$0.85	10	10	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	New	1,202.25	10	\$275.00	15%	25%	\$0.02	2,754	2,859	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	440.30	45	\$299.39	71%	75%	\$0.05	451	468	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-49	Installation	New	547.26	45	\$698.57	30%	75%	\$0.09	5,569	5,781	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	New	603.79	20	\$640.82	79%	80%	\$0.07	79	79	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	New	679.50	45	\$2,278.67	76%	76%	\$0.18	60	63	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	New	739.90	45	\$1,276.53	7%	75%	\$0.12	11,438	11,870	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	New	149.61	30	\$997.30	15%	75%	\$0.34	2,034	2,111	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$4,131.56	80%	80%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	New	456.86	25	\$3,492.66	2%	20%	\$0.46	1,912	1,984	BEST Simulation
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$13,458.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	54.29	45	\$3,450.56	47%	75%	\$0.29	348	361	Developed from RTF "SFwX" v2.4 7/2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	2.58	1	\$12.00	0%	37%	\$0.04	744	2,629	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	Existing	6.65	10	\$275.00	15%	25%	\$0.01	505	917	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	57.75	8	\$154.47	0%	10%	\$0.11	4,286	10,784	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.15	20	\$0.50	100%	at stock turnover	\$0.02	2,517	2,682	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	20.00	6	-\$3.52	100%	at stock turnover	\$0.01	0	8,780	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	10.04	14	\$3.91	100%	at stock turnover	\$0.03	83,636	100,203	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	14.53	6	-\$0.28	100%	at stock turnover	\$0.01	0	8,171	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	7.30	14	\$3.30	100%	at stock turnover	\$0.02	161,243	105,258	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	68.07	25	\$4,558.10	15%	75%	\$0.15	9,781	16,780	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	2.64	1	\$12.00	0%	37%	\$0.05	317	537	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	New	6.83	10	\$275.00	15%	25%	\$0.02	164	281	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	59.24	8	\$154.47	0%	10%	\$0.10	1,397	2,403	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.15	20	\$0.50	100%	at stock turnover	\$0.02	1,290	1,351	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	20.01	6	-\$3.52	100%	at stock turnover	\$0.01	0	775	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	10.05	14	\$3.91	100%	at stock turnover	\$0.03	39,821	21,707	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	14.53	6	-\$0.28	100%	at stock turnover	\$0.01	0	686	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	7.30	14	\$3.30	100%	at stock turnover	\$0.01	71,266	28,433	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	10.11	1	\$12.00	0%	37%	\$0.04	5,018	5,253	OPower
Single Family	Miscellaneous	Furnace Fan - ECM	Installation	Existing	115.61	20	\$98.65	90%	at stock turnover	\$0.06	26,634	27,086	Illinois TRM
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	7%	at stock turnover	\$0.14	4,045	3,968	WAPA Fact Sheet
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.04	8,176	8,020	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	Existing	1,540.26	20	\$3,682.80	0%	30%	\$0.14	928	1,484	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	Existing	142.80	10	\$30.00	1%	75%	\$0.01	1,089	1,307	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	3%	at stock turnover	\$0.07	4,800	4,709	CEC 2000 Appliance Standards
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	10.52	1	\$12.00	0%	37%	\$0.05	2,037	2,060	OPower
Single Family	Miscellaneous	Furnace Fan - ECM	Installation	New	115.61	20	\$98.65	90%	at stock turnover	\$0.06	13,857	14,042	Illinois TRM
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	7%	at stock turnover	\$0.13	1,948	1,909	WAPA Fact Sheet
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.04	3,938	3,858	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	New	1,264.35	20	\$3,682.80	0%	30%	\$0.14	213	326	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	New	131.93	10	\$30.00	1%	75%	\$0.01	297	342	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	3%	at stock turnover	\$0.07	2,312	2,265	CEC 2000 Appliance Standards
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	39.98	1	\$12.00	0%	37%	\$0.04	617	834	OPower

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Water Heating	Water Heater - Desuperheater	Installation	Existing	1,267.76	20	\$1,117.41	0%	0%	\$0.06	157	184	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	324.54	40	\$600.05	1%	5%	\$0.13	534	628	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	232.77	9	\$16.00	34%	50%	\$0.00	3,145	4,035	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	217.59	10	\$26.82	51%	75%	\$0.01	4,399	5,691	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	129.68	15	\$30.00	11%	75%	\$0.02	3,427	4,488	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	Existing	1,483.57	20	\$5,783.33	1%	30%	\$0.26	17,629	20,818	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	Existing	74.96	5	\$121.01	15%	75%	\$0.11	1,846	2,454	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,800.40	16	\$1,000.97	8%	at stock turnover	\$0.04	25,004	25,295	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	New	38.56	1	\$12.00	0%	37%	\$0.05	207	242	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	New	1,263.43	20	\$1,117.41	0%	0%	\$0.06	41	49	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	323.34	40	\$585.52	1%	10%	\$0.12	319	373	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	New	216.31	9	\$16.00	43%	50%	\$0.01	316	370	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	204.96	10	\$26.82	65%	75%	\$0.01	450	526	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	New	124.68	15	\$30.00	11%	75%	\$0.02	875	1,024	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	New	1,426.51	20	\$5,783.33	1%	30%	\$0.27	4,523	5,293	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	New	74.32	5	\$121.01	15%	75%	\$0.11	488	571	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,800.40	16	\$1,000.97	7%	at stock turnover	\$0.04	12,323	12,426	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation

Washington Residential Measure Assumptions

Table H-4 Table of Washington Residential Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	Existing	6.64	1	\$12.00	0%	45%	\$0.05	195	226	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	266.22	14	\$306.84	91%	at stock turnover	\$0.14	644	643	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.23	14	\$262.41	99%	at stock turnover	\$0.93	265	249	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	9.08	15	\$6.92	77%	at stock turnover	\$0.09	80	74	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	426.12	5	\$103.00	0%	50%	\$0.03	865	1,073	PacifiCorp Program Data
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	96.78	21	\$12.44	43%	at stock turnover	\$0.01	84	84	Developed from RTF "ResFreezer" v2.2 (11/2012)
Manufactured Home	Appliances	Microwave - Efficient	Installation	Existing	8.52	15	\$88.95	97%	at stock turnover	\$1.25	41	39	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	96.65	17	\$71.90	100%	at stock turnover	\$0.08	117	117	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	466.87	7	\$103.00	0%	75%	\$0.03	744	885	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	185.98	17	\$76.00	21%	at stock turnover	\$0.05	100	101	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	Existing	1.54	17	\$112.36	90%	at stock turnover	\$8.20	5	5	DOE Report
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	New	6.22	1	\$12.00	0%	45%	\$0.06	6	6	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	266.22	14	\$306.84	99%	at stock turnover	\$0.14	21	21	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.23	14	\$262.41	99%	at stock turnover	\$0.93	9	8	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	9.08	15	\$6.92	93%	at stock turnover	\$0.09	3	3	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	New	407.95	5	\$103.00	0%	50%	\$0.03	34	36	PacifiCorp Program Data
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	96.78	21	\$12.44	67%	at stock turnover	\$0.01	3	3	Developed from RTF "ResFreezer" v2.2 (11/2012)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Microwave - Efficient	Installation	New	8.52	15	\$88.95	97%	at stock turnover	\$1.25	1	1	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	96.65	17	\$71.90	100%	at stock turnover	\$0.08	4	4	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	450.62	7	\$103.00	0%	75%	\$0.03	28	29	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	185.97	17	\$76.00	33%	at stock turnover	\$0.05	5	5	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	New	1.54	17	\$112.36	92%	at stock turnover	\$8.20	0	0	DOE Report
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	224.55	14	\$1,491.99	16%	at stock turnover	\$0.09	310	305	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	124.24	5	\$500.00	15%	40%	\$0.89	227	327	Hawaii TRM
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	Existing	20.25	1	\$12.00	0%	45%	\$0.05	89	106	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	Existing	166.85	10	\$295.58	40%	75%	\$0.24	546	614	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	176.16	2	\$175.00	7%	75%	\$0.52	520	612	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	132.79	14	\$464.04	46%	at stock turnover	\$0.43	224	207	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	Existing	156.13	2	\$175.00	2%	75%	\$0.09	218	242	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	964.97	14	-\$284.75	46%	at stock turnover	-\$0.41	29	23	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	Existing	217.31	15	\$1,127.38	15%	75%	\$0.55	1,149	1,371	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	9.96	20	\$182.30	2%	80%	\$0.10	76	84	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	0.00	18	\$419.03	29%	75%	\$0.00	0	0	Developed from RTF "ResSFductSealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	153.63	15	\$3,913.00	0%	75%	\$0.11	674	331	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	161.10	15	\$179.29	4%	at stock turnover	\$0.13	5	6	New Buildings Institute Study, 2006

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	0.00	20	\$0.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	Existing	91.18	10	\$275.00	15%	25%	\$0.04	90	96	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.00	25	\$339.51	66%	75%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-30	Installation	Existing	0.00	25	\$792.20	19%	75%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	Existing	63.96	20	\$640.82	48%	60%	\$0.12	51	58	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	Existing	112.40	25	\$943.09	36%	60%	\$0.09	264	290	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	Existing	23.51	25	\$1,130.96	15%	75%	\$0.45	137	156	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,910.89	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,306.11	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Room AC - EER 11.5	Installation	Existing	28.52	12	\$86.75	26%	at stock turnover	\$0.41	24	24	BEST Simulation
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	Existing	33.69	8	\$49.00	0%	50%	\$0.22	33	50	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	Existing	24.64	5	\$698.88	15%	40%	\$5.58	49	65	PG&E Document "PGECOHC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$940.90	7%	75%	\$0.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	179.40	20	\$1,242.48	15%	75%	\$0.60	909	1,194	DEER
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	31.14	25	\$4,558.10	15%	75%	\$0.23	4	4	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	190.30	14	\$1,235.29	16%	at stock turnover	\$0.14	10	10	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	92.95	5	\$500.00	15%	40%	\$1.05	5	5	Hawaii TRM
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	New	16.67	1	\$12.00	0%	45%	\$0.06	2	2	OPower

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	New	142.43	10	\$295.58	40%	75%	\$0.28	11	11	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	120.80	2	\$175.00	7%	75%	\$0.75	8	9	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	121.18	14	\$384.20	48%	at stock turnover	\$0.39	7	6	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	New	110.95	2	\$175.00	2%	75%	\$0.16	4	4	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	746.46	14	-\$197.58	48%	at stock turnover	-\$0.46	1	1	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	New	236.69	15	\$1,000.84	15%	75%	\$0.44	31	32	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	6.26	20	\$39.50	0%	80%	\$0.02	1	1	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	0.00	18	\$419.03	28%	75%	\$0.00	0	0	Developed from RTF "ResSF Duct Sealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	New	137.45	15	\$3,913.00	0%	75%	\$0.13	12	9	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	177.21	15	\$186.62	3%	at stock turnover	\$0.12	0	0	New Buildings Institute Study, 2006
Manufactured Home	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	0.00	20	\$0.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	New	70.93	10	\$275.00	15%	25%	\$0.08	2	2	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$339.51	75%	75%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-49	Installation	New	0.00	25	\$792.20	57%	75%	\$0.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	New	55.24	20	\$640.82	48%	80%	\$0.10	3	3	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	New	88.94	25	\$1,886.19	66%	75%	\$0.24	2	2	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	New	32.97	25	\$1,130.96	15%	75%	\$0.33	4	4	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,910.89	68%	80%	\$0.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	New	23.74	25	\$3,306.11	15%	20%	\$0.71	0	0	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	New	193.94	12	\$166.65	20%	at stock turnover	\$0.12	2	2	BEST Simulation
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	New	44.71	8	\$49.00	0%	50%	\$0.18	1	1	Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	New	25.26	5	\$698.88	15%	40%	\$4.98	1	1	PG&E Document "PGECOHC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$940.90	55%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	187.52	20	\$1,242.48	15%	75%	\$0.54	25	25	DEER
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.99	1	\$12.00	0%	45%	\$0.05	118	139	OPower
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	6.63	5	\$17.35	15%	50%	\$0.61	911	1,035	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.92	5	\$33.39	1%	2%	\$0.54	7	7	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	Existing	343.22	4	\$0.08	13%	at stock turnover	\$0.00	43	58	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	Existing	16.23	8	\$0.01	84%	at stock turnover	\$0.00	17	16	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	Existing	121.88	5	\$0.01	84%	at stock turnover	\$0.00	676	758	ENERGY STAR Calc
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	18.37	5	\$0.01	72%	at stock turnover	\$0.00	13	15	ENERGY STAR Calc
Manufactured Home	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	4.84	5	\$11.47	132%	at stock turnover	\$0.00	61	88	NCTA Agreement
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	81.06	10	\$24.88	201%	at stock turnover	\$0.05	609	550	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	New	1.98	1	\$12.00	0%	45%	\$0.06	4	5	OPower
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	6.90	5	\$17.35	15%	50%	\$0.57	26	28	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.41	5	\$2.59	1%	2%	\$0.04	0	0	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	New	237.88	4	\$0.05	18%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	New	15.01	8	\$0.01	91%	at stock turnover	\$0.00	1	1	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	New	110.57	5	\$0.01	93%	at stock turnover	\$0.00	22	25	ENERGY STAR Calc
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	16.67	5	\$0.01	79%	at stock turnover	\$0.00	0	0	ENERGY STAR Calc

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	3.83	5	\$9.09	167%	at stock turnover	\$0.00	2	3	NCTA Agreement
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	New	64.26	10	\$19.72	254%	at stock turnover	\$0.05	25	23	PG&E Document "PGE0APP104 Energy Efficient Televisions"
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.92	1	\$12.00	0%	45%	\$0.05	2	9	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	10.47	8	\$39.33	7%	50%	\$0.36	24	71	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	9.27	12	\$276.84	1%	30%	\$2.04	13	43	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	10.07	5	\$69.58	0%	50%	\$0.89	26	79	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	Existing	2.33	10	\$275.00	15%	25%	\$0.04	1	3	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	55.35	6	-\$1.98	100%	at stock turnover	-\$0.01	0	31	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	27.79	14	\$6.63	100%	at stock turnover	\$0.01	347	393	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.91	1	\$12.00	0%	45%	\$0.06	0	0	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	10.36	8	\$39.33	11%	50%	\$0.36	1	1	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	7.82	12	\$276.84	1%	30%	\$2.38	0	1	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	10.04	5	\$69.58	3%	50%	\$0.88	1	1	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	New	2.30	10	\$275.00	15%	25%	\$0.08	0	0	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	55.44	6	-\$1.98	100%	at stock turnover	-\$0.01	0	1	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	27.84	14	\$6.63	100%	at stock turnover	\$0.01	12	11	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	2,278.58	14	\$1,744.90	16%	at stock turnover	\$0.09	3,144	3,094	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	Existing	149.72	1	\$12.00	0%	45%	\$0.05	483	552	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	Existing	814.59	2	\$175.00	2%	75%	\$0.09	1,065	1,266	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	155.69	20	\$182.30	2%	80%	\$0.10	889	970	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	1,490.82	18	\$419.03	29%	75%	\$0.03	5,153	5,295	Developed from RTF "ResSF Duct Sealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	Existing	3,620.72	15	\$3,913.00	0%	75%	\$0.11	457	451	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	51%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	72.21	20	\$1,675.66	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	Existing	792.66	10	\$275.00	15%	25%	\$0.04	597	623	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	947.15	25	\$339.51	66%	75%	\$0.03	640	674	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-30	Installation	Existing	546.43	25	\$792.20	19%	75%	\$0.13	2,233	2,467	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	Existing	465.05	20	\$640.82	48%	60%	\$0.12	298	315	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	Existing	817.93	25	\$943.09	36%	60%	\$0.09	1,439	1,556	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	Existing	195.41	25	\$1,130.96	15%	75%	\$0.45	834	950	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,910.89	40%	40%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,306.11	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$10,503.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	531.10	25	\$940.90	7%	75%	\$0.16	2,591	2,902	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	1,610.41	25	\$4,558.10	15%	75%	\$0.23	172	177	Developed from RTF - ResNewSFESStarWAlDmT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	1,109.02	14	\$1,422.58	16%	at stock turnover	\$0.14	58	56	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	New	117.02	1	\$12.00	0%	45%	\$0.06	12	13	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	New	399.77	2	\$175.00	2%	75%	\$0.16	13	14	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	170.42	20	\$39.50	0%	80%	\$0.02	25	26	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	1,155.65	18	\$419.03	28%	75%	\$0.04	97	99	Developed from RTF "ResSFDUCTSealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	New	2,982.20	15	\$3,913.00	0%	75%	\$0.13	8	7	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	54%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	23.62	20	\$1,387.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	New	419.03	10	\$275.00	15%	25%	\$0.08	8	8	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$339.51	75%	75%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-49	Installation	New	430.55	25	\$792.20	57%	75%	\$0.17	14	14	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	New	569.68	20	\$640.82	48%	80%	\$0.10	24	24	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	New	568.32	25	\$1,886.19	66%	75%	\$0.24	9	9	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	New	250.63	25	\$1,130.96	15%	75%	\$0.33	26	27	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	New	1,715.58	25	\$3,910.89	68%	80%	\$0.21	37	38	Developed from RTF "SFwX" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	New	352.76	25	\$3,306.11	15%	20%	\$0.71	3	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$10,503.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	423.59	25	\$940.90	55%	75%	\$0.20	15	15	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	2.51	1	\$12.00	0%	45%	\$0.05	21	71	OPower
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	Existing	5.75	10	\$275.00	15%	25%	\$0.04	12	19	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	54.90	8	\$153.29	0%	10%	\$0.27	101	245	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	2.57	20	\$0.85	100%	at stock turnover	-\$0.17	82	87	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	30.94	6	-\$4.00	100%	at stock turnover	-\$0.04	0	286	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	15.54	14	\$4.45	100%	at stock turnover	\$0.01	1,864	2,857	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	21.52	6	-\$0.42	100%	at stock turnover	-\$0.02	0	76	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	10.81	14	\$4.95	100%	at stock turnover	-\$0.03	1,789	1,120	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	60.39	25	\$4,558.10	15%	75%	\$0.23	18	35	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	2.56	1	\$12.00	0%	45%	\$0.06	1	1	OPower

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	New	5.92	10	\$275.00	15%	25%	\$0.08	0	1	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	56.09	8	\$158.05	0%	10%	\$0.27	2	5	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	2.57	20	\$0.85	100%	at stock turnover	-\$0.17	3	4	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	30.94	6	-\$4.00	100%	at stock turnover	-\$0.04	0	3	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	15.54	14	\$4.45	100%	at stock turnover	\$0.02	68	59	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	22.35	6	-\$0.42	100%	at stock turnover	-\$0.02	0	1	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	11.22	14	\$4.95	100%	at stock turnover	-\$0.04	63	33	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	9.77	1	\$12.00	0%	45%	\$0.05	209	189	OPower
Manufactured Home	Miscellaneous	Furnace Fan - ECM	Installation	Existing	39.84	20	\$98.65	71%	at stock turnover	\$0.24	180	183	Illinois TRM
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	11%	at stock turnover	\$0.22	146	143	WAPA Fact Sheet
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	10.42	1	\$12.00	0%	45%	\$0.06	7	6	OPower
Manufactured Home	Miscellaneous	Furnace Fan - ECM	Installation	New	39.84	20	\$98.65	71%	at stock turnover	\$0.24	6	6	Illinois TRM
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	16%	at stock turnover	\$0.22	7	7	WAPA Fact Sheet

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	39.69	1	\$12.00	0%	45%	\$0.05	163	221	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	289.37	40	\$478.25	1%	5%	\$0.13	112	129	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	221.12	9	\$8.00	28%	50%	\$0.01	973	1,200	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	203.95	10	\$26.82	41%	75%	\$0.02	1,348	1,677	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	120.60	15	\$30.00	11%	75%	\$0.03	752	952	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	Existing	1,382.40	20	\$5,783.33	0%	30%	\$0.37	4,048	4,635	6th Plan
Manufactured Home	Water Heating	Water Heater - Timer	Installation	Existing	66.84	5	\$121.01	15%	75%	\$0.37	331	499	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,650.20	16	\$1,000.97	94%	at stock turnover	\$0.07	6,038	6,111	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	New	29.81	1	\$12.00	0%	45%	\$0.06	5	5	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	225.16	40	\$478.25	1%	10%	\$0.13	6	6	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	New	165.82	9	\$8.00	28%	50%	\$0.01	21	22	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	153.17	10	\$26.82	42%	75%	\$0.02	29	31	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	New	90.40	15	\$30.00	11%	75%	\$0.03	17	18	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	New	1,036.85	20	\$5,783.33	0%	30%	\$0.37	90	95	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Water Heating	Water Heater - Timer	Installation	New	51.82	5	\$121.01	15%	75%	\$0.37	9	10	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,650.20	16	\$1,000.97	102%	at stock turnover	\$0.07	195	196	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	1%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.22	1	\$12.00	0%	45%	\$0.12	182	206	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	168.94	14	\$306.84	47%	at stock turnover	\$0.23	320	320	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.13	14	\$262.41	47%	at stock turnover	\$0.93	191	179	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	9.09	15	\$6.92	78%	at stock turnover	\$0.09	123	114	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	425.48	5	\$103.00	0%	50%	\$0.03	123	152	PacifiCorp Program Data
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	96.78	21	\$12.44	4%	at stock turnover	\$0.01	12	12	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	Existing	8.52	15	\$88.95	97%	at stock turnover	\$1.25	63	60	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	96.65	17	\$71.90	100%	at stock turnover	\$0.08	177	178	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	466.87	7	\$103.00	0%	75%	\$0.03	162	192	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	185.98	17	\$76.00	3%	at stock turnover	\$0.05	22	22	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	Existing	1.02	17	\$112.36	97%	at stock turnover	\$12.34	6	6	DOE Report
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	New	5.10	1	\$12.00	0%	45%	\$0.13	6	6	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	168.94	14	\$306.84	75%	at stock turnover	\$0.23	17	16	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.13	14	\$262.41	47%	at stock turnover	\$0.93	6	6	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	9.09	15	\$6.92	94%	at stock turnover	\$0.09	4	4	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	New	408.76	5	\$103.00	0%	50%	\$0.03	0	0	PacifiCorp Program Data

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Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	96.78	21	\$12.44	1%	at stock turnover	\$0.01	0	0	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	New	8.52	15	\$88.95	97%	at stock turnover	\$1.25	2	2	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	96.65	17	\$71.90	100%	at stock turnover	\$0.08	6	6	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	450.65	7	\$103.00	0%	75%	\$0.03	12	12	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	185.98	17	\$76.00	9%	at stock turnover	\$0.05	2	2	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	New	1.02	17	\$112.36	85%	at stock turnover	\$12.34	0	0	DOE Report
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	57.33	14	\$369.01	3%	at stock turnover	\$0.09	25	25	BEST Simulation
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	32.51	5	\$500.00	2%	10%	\$3.28	27	44	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	Existing	5.53	1	\$12.00	0%	45%	\$0.12	37	44	OPower
Multifamily	Cooling	Ceiling Fan - Installation	Installation	Existing	45.76	10	\$295.58	40%	75%	\$0.90	157	256	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	38.73	2	\$175.00	1%	75%	\$2.27	37	46	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	31.10	14	\$482.22	10%	at stock turnover	\$1.93	14	13	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	Existing	34.28	2	\$175.00	0%	75%	\$1.63	13	17	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	0.00	14	-\$354.76	10%	at stock turnover	\$10.00	0	0	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	Existing	0.00	15	\$1,176.00	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	0.00	20	\$182.30	74%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	0.00	18	\$419.03	30%	75%	\$0.00	0	0	Developed from RTF "ResSFDuctSealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	0.00	15	\$3,913.00	1%	75%	\$0.00	1,602	0	Developed from RTF DHP_UES v1.5 (under review)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	77.64	15	\$127.46	0%	at stock turnover	\$0.00	0	0	New Buildings Institute Study, 2006
Multifamily	Cooling	Geothermal Heat Pump - EER 30 / COP 5.0 Ductless, Var.Ref.Flow	Installation	Existing	90.83	20	\$973.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	Existing	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.00	25	\$241.36	50%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-30	Installation	Existing	0.00	25	\$563.17	26%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	Existing	5.25	20	\$640.82	2%	60%	\$10.48	6	7	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	Existing	31.96	25	\$670.45	13%	60%	\$0.28	216	247	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	Existing	30.59	30	\$804.00	15%	75%	\$0.27	279	301	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$430.35	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$363.80	15%	15%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Room AC - EER 11.5	Installation	Existing	15.12	12	\$334.29	81%	at stock turnover	\$3.01	61	61	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	Existing	0.00	8	\$49.00	0%	50%	\$10.00	0	0	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Whole-House Fan - Installation	Installation	Existing	9.57	5	\$698.88	2%	10%	\$15.53	8	13	PG&E Document "PGECOHC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$1,064.09	26%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	69.77	20	\$484.91	33%	75%	\$0.65	317	486	DEER
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	36.45	25	\$4,558.10	15%	75%	\$0.77	7	8	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	53.44	14	\$346.05	0%	at stock turnover	\$0.14	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	29.00	5	\$500.00	2%	10%	\$3.49	1	1	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	New	5.10	1	\$12.00	0%	45%	\$0.13	1	1	OPower
Multifamily	Cooling	Ceiling Fan - Installation	Installation	New	44.23	10	\$295.58	40%	75%	\$0.91	4	5	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	35.63	2	\$175.00	1%	75%	\$2.40	2	3	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	30.07	14	\$527.25	27%	at stock turnover	\$2.18	3	3	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	New	30.77	2	\$175.00	0%	75%	\$2.64	0	0	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	0.00	14	-\$388.10	27%	at stock turnover	\$10.00	0	0	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	New	0.00	15	\$1,044.00	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	80%	80%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	0.00	18	\$419.03	30%	75%	\$0.00	0	0	Developed from RTF "ResSF Duct Sealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	New	0.00	15	\$3,913.00	6%	75%	\$0.00	30	18	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	85.41	15	\$139.14	0%	at stock turnover	\$0.00	0	0	New Buildings Institute Study, 2006
Multifamily	Cooling	Geothermal Heat Pump - EER 30 / COP 5.0 Ductless, Var.Ref.Flow	Installation	New	87.29	20	\$913.23	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	New	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$241.36	73%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-49	Installation	New	0.00	25	\$563.17	17%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	New	4.12	20	\$640.82	13%	80%	\$12.87	0	0	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	New	26.59	25	\$1,340.89	30%	75%	\$0.66	4	4	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	New	-16.91	45	\$1,276.53	43%	75%	\$0.68	-2	-2	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	New	44.35	30	\$804.00	15%	75%	\$0.21	10	10	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$430.35	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	New	0.00	25	\$363.80	15%	20%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Room AC - EER 11.5	Installation	New	15.38	12	\$365.05	72%	at stock turnover	\$3.23	2	2	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	New	0.00	8	\$49.00	0%	50%	\$10.00	0	0	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Whole-House Fan - Installation	Installation	New	8.91	5	\$698.88	2%	10%	\$15.81	0	0	PG&E Document "PGECOHC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$1,064.09	37%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	67.16	20	\$484.91	53%	75%	\$0.67	5	5	DEER
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.81	1	\$12.00	0%	45%	\$0.12	135	161	OPower
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	4.38	5	\$12.34	15%	50%	\$0.65	757	866	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.92	5	\$33.39	1%	2%	\$0.54	11	11	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	Existing	468.90	4	\$0.11	9%	at stock turnover	\$0.00	48	64	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	Existing	22.17	8	\$0.02	62%	at stock turnover	\$0.00	19	17	ENERGY STAR Calc
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	Existing	166.51	5	\$0.02	62%	at stock turnover	\$0.00	752	843	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	23.92	5	\$0.02	55%	at stock turnover	\$0.00	15	17	ENERGY STAR Calc
Multifamily	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	5.50	5	\$13.05	116%	at stock turnover	\$0.00	81	118	NCTA Agreement
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	100.40	10	\$32.89	152%	at stock turnover	\$0.05	655	591	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	New	1.79	1	\$12.00	0%	45%	\$0.13	5	5	OPower
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	4.54	5	\$12.34	15%	50%	\$0.62	22	24	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.41	5	\$2.59	1%	2%	\$0.04	0	0	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	New	323.88	4	\$0.07	13%	at stock turnover	\$0.00	2	3	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	New	15.52	8	\$0.01	88%	at stock turnover	\$0.00	1	1	ENERGY STAR Calc

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	New	126.26	5	\$0.01	81%	at stock turnover	\$0.00	30	33	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	18.14	5	\$0.01	73%	at stock turnover	\$0.00	1	1	ENERGY STAR Calc
Multifamily	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	6.03	5	\$14.29	145%	at stock turnover	\$0.00	3	4	NCTA Agreement
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	New	109.93	10	\$36.02	190%	at stock turnover	\$0.05	27	24	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.85	1	\$12.00	0%	45%	\$0.12	3	13	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	9.71	8	\$35.91	1%	50%	\$0.36	38	113	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	8.54	12	\$252.77	1%	30%	\$2.01	19	61	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	9.29	5	\$63.53	1%	50%	\$0.88	36	110	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	Existing	1.97	10	\$275.00	15%	25%	\$1.49	1	3	BEST Simulation
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	57.60	6	-\$2.02	100%	at stock turnover	-\$0.01	0	43	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	28.92	14	\$6.75	100%	at stock turnover	\$0.01	488	553	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.96	1	\$12.00	0%	45%	\$0.13	0	0	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	10.87	8	\$35.91	0%	50%	\$0.31	1	3	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	8.10	12	\$252.77	1%	30%	\$2.08	0	1	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	10.44	5	\$63.53	0%	50%	\$0.77	1	2	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	New	2.21	10	\$275.00	15%	25%	\$2.08	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	57.69	6	-\$2.02	100%	at stock turnover	-\$0.01	0	1	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	28.97	14	\$6.75	100%	at stock turnover	\$0.01	19	17	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	367.43	14	\$290.72	3%	at stock turnover	\$0.09	161	158	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	Existing	35.82	1	\$12.00	0%	45%	\$0.12	260	268	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	Existing	15.94	2	\$175.00	0%	75%	\$1.63	6	8	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	134.82	20	\$182.30	74%	80%	\$0.14	142	144	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	265.30	18	\$419.03	30%	75%	\$0.16	114	125	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	Existing	852.80	15	\$3,913.00	1%	75%	\$0.41	9,845	9,777	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	2%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Geothermal Heat Pump - EER 30 / COP 5.0 Ductless, Var.Ref.Flow	Installation	Existing	250.62	20	\$1,134.08	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	Existing	13.03	10	\$275.00	15%	25%	\$1.57	17	21	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	237.71	25	\$241.36	50%	75%	\$0.10	980	979	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-30	Installation	Existing	115.21	25	\$563.17	26%	75%	\$0.40	754	962	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	Existing	0.00	20	\$640.82	2%	60%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	Existing	203.22	25	\$670.45	13%	60%	\$0.28	1,477	1,590	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	Existing	242.67	30	\$804.00	15%	75%	\$0.27	2,414	2,411	ORNL.gov Calculator
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$430.35	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$363.80	15%	15%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$3,328.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	112.31	25	\$1,064.09	26%	75%	\$0.76	740	955	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	368.37	25	\$4,558.10	15%	75%	\$0.77	71	73	Developed from RTF - ResNewSFStarWAIMDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	183.30	14	\$272.62	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	New	30.15	1	\$12.00	0%	45%	\$0.13	6	6	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	0%	75%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	80%	80%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	335.92	18	\$419.03	30%	75%	\$0.13	4	4	Developed from RTF "ResSFDuctSealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	New	711.76	15	\$3,913.00	6%	75%	\$0.48	166	164	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	6%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Geothermal Heat Pump - EER 30 / COP 5.0 Ductless, Var.Ref.Flow	Installation	New	204.62	20	\$1,063.50	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	New	3.70	10	\$275.00	15%	25%	\$2.18	0	0	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	199.25	25	\$241.36	73%	75%	\$0.12	2	2	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-49	Installation	New	99.64	25	\$563.17	17%	75%	\$0.48	23	22	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	New	0.00	20	\$640.82	13%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	New	143.41	25	\$1,340.89	30%	75%	\$0.66	21	22	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	New	138.41	45	\$1,276.53	43%	75%	\$0.68	16	15	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	New	312.16	30	\$804.00	15%	75%	\$0.21	67	67	ORNL.gov Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$430.35	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	New	312.40	25	\$363.80	15%	20%	\$0.12	6	6	BEST Simulation
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$3,328.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	86.51	25	\$1,064.09	37%	75%	\$0.91	11	11	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESstarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.91	1	\$12.00	0%	45%	\$0.12	23	84	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	Existing	4.39	10	\$275.00	15%	25%	\$1.50	13	22	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	41.90	8	\$66.85	0%	10%	\$0.16	111	283	DEER
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	3.02	20	\$0.85	100%	at stock turnover	-\$0.14	67	72	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	36.04	6	-\$3.96	100%	at stock turnover	-\$0.03	0	238	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	18.10	14	\$4.40	100%	at stock turnover	\$0.01	2,674	3,033	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	24.91	6	-\$0.42	100%	at stock turnover	-\$0.02	0	32	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	12.51	14	\$4.92	100%	at stock turnover	-\$0.03	761	477	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Advanced New Construction Designs -	Installation	New	51.44	25	\$4,558.10	15%	75%	\$0.76	22	45	Developed from RTF - ResNewSFESstarWAIDMT v2.2 (Rev 2/2012, Average used)

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
		ENERGY STAR Home Design											
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	2.17	1	\$12.00	0%	45%	\$0.13	1	2	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	New	4.49	10	\$275.00	15%	25%	\$2.08	0	1	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	47.53	8	\$71.11	2%	10%	\$0.15	3	5	DEER
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	3.02	20	\$0.85	100%	at stock turnover	-\$0.14	3	3	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	36.04	6	-\$3.96	100%	at stock turnover	-\$0.03	0	5	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	18.10	14	\$4.40	100%	at stock turnover	\$0.01	106	93	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	25.86	6	-\$0.42	100%	at stock turnover	-\$0.02	0	1	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	12.99	14	\$4.92	100%	at stock turnover	-\$0.03	30	16	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	12.36	1	\$12.00	0%	45%	\$0.12	284	280	OPower
Multifamily	Miscellaneous	Furnace Fan - ECM	Installation	Existing	18.41	20	\$98.65	6%	at stock turnover	\$0.52	11	12	Illinois TRM
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	13.59	1	\$12.00	0%	45%	\$0.13	9	9	OPower
Multifamily	Miscellaneous	Furnace Fan - ECM	Installation	New	18.41	20	\$98.65	6%	at stock turnover	\$0.52	0	0	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	29.90	1	\$12.00	0%	45%	\$0.12	197	276	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	272.58	40	\$478.25	1%	5%	\$0.13	162	191	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	182.07	9	\$8.00	12%	50%	\$0.01	2,102	2,641	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	165.54	10	\$13.41	18%	75%	\$0.01	2,849	3,657	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	94.40	15	\$30.00	11%	75%	\$0.03	907	1,196	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	Existing	1,081.50	20	\$5,783.33	1%	30%	\$0.45	4,648	5,485	6th Plan
Multifamily	Water Heating	Water Heater - Timer	Installation	Existing	62.94	5	\$121.01	15%	75%	\$0.37	561	754	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,374.70	16	\$1,000.97	92%	at stock turnover	\$0.08	7,354	7,442	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	7%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	New	21.96	1	\$12.00	0%	45%	\$0.13	4	4	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	206.93	40	\$478.25	1%	10%	\$0.13	5	5	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	New	134.89	9	\$8.00	8%	50%	\$0.01	31	33	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	122.19	10	\$13.41	13%	75%	\$0.01	42	45	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	New	69.32	15	\$30.00	11%	75%	\$0.03	12	13	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	New	790.95	20	\$5,783.33	1%	30%	\$0.46	64	67	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Water Heating	Water Heater - Timer	Installation	New	47.57	5	\$121.01	15%	75%	\$0.39	8	8	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,374.70	16	\$1,000.97	54%	at stock turnover	\$0.08	145	145	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	7%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	Existing	6.16	1	\$12.00	0%	45%	\$0.05	972	1,220	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	213.59	14	\$306.84	94%	at stock turnover	\$0.18	2,956	2,954	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.65	14	\$262.41	98%	at stock turnover	\$0.92	1,477	1,387	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	7.95	15	\$6.92	76%	at stock turnover	\$0.10	380	355	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	425.48	5	\$103.00	0%	50%	\$0.03	7,456	9,203	PacifiCorp Program Data
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	96.78	21	\$12.44	66%	at stock turnover	\$0.01	723	723	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	Existing	8.52	15	\$88.95	95%	at stock turnover	\$1.25	227	215	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	96.65	17	\$71.90	100%	at stock turnover	\$0.08	648	652	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	466.87	7	\$103.00	0%	75%	\$0.03	6,176	7,338	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	185.98	17	\$76.00	32%	at stock turnover	\$0.05	828	834	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	Existing	1.27	17	\$112.36	79%	at stock turnover	\$9.94	21	22	DOE Report
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	New	5.40	1	\$12.00	0%	45%	\$0.06	27	28	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	213.59	14	\$306.84	93%	at stock turnover	\$0.18	95	94	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.65	14	\$262.41	99%	at stock turnover	\$0.92	49	44	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	7.95	15	\$6.92	91%	at stock turnover	\$0.10	14	13	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	New	460.50	5	\$103.00	0%	50%	\$0.03	164	170	PacifiCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	96.78	21	\$12.44	51%	at stock turnover	\$0.01	15	15	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	New	8.52	15	\$88.95	95%	at stock turnover	\$1.25	8	7	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	96.65	17	\$71.90	100%	at stock turnover	\$0.08	21	20	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	450.65	7	\$103.00	0%	75%	\$0.03	113	119	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	185.98	17	\$76.00	24%	at stock turnover	\$0.05	20	20	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	New	1.27	17	\$112.36	66%	at stock turnover	\$9.94	1	1	DOE Report
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESstarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	203.40	14	\$1,305.31	27%	at stock turnover	\$0.09	2,690	2,647	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	99.28	5	\$500.00	15%	40%	\$1.06	1,150	1,562	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	Existing	16.85	1	\$12.00	0%	45%	\$0.05	447	523	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	Existing	140.58	10	\$295.58	40%	75%	\$0.29	2,836	3,101	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	143.62	2	\$175.00	7%	75%	\$0.64	1,974	2,779	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	109.75	14	\$405.98	46%	at stock turnover	\$0.46	1,018	936	BEST Simulation
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	Existing	110.72	2	\$175.00	4%	75%	\$0.11	1,488	1,623	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	612.02	14	-\$247.88	46%	at stock turnover	-\$0.59	77	61	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	Existing	178.64	15	\$823.20	15%	75%	\$0.50	5,397	6,752	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	8.98	20	\$182.30	43%	80%	\$0.11	195	215	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	0.00	20	\$601.43	30%	75%	\$0.00	0	0	Developed from RTF "ResSFductSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	103.25	15	\$3,913.00	1%	75%	\$0.12	1,943	936	Developed from RTF DHP_UES v1.5 (under review)

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	188.14	15	\$158.10	3%	at stock turnover	\$0.10	26	30	New Buildings Institute Study, 2006
Single Family	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	81.26	20	\$861.18	0%	at stock turnover	\$1.19	10	10	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	Existing	81.73	10	\$275.00	15%	25%	\$0.05	488	516	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.00	45	\$299.39	34%	75%	\$0.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Ceiling - R-30	Installation	Existing	0.00	45	\$698.57	43%	75%	\$0.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	Existing	42.91	20	\$640.82	52%	60%	\$0.15	151	169	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	Existing	93.42	45	\$1,447.04	49%	60%	\$0.15	594	665	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	Existing	25.21	30	\$997.30	15%	75%	\$0.37	854	987	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,590.09	40%	40%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,034.92	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Room AC - EER 11.5	Installation	Existing	19.21	12	\$66.52	20%	at stock turnover	\$0.47	69	70	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	Existing	30.59	8	\$49.00	0%	50%	\$0.25	127	195	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	Existing	27.17	5	\$698.88	15%	40%	\$5.01	332	427	PG&E Document "PGECHVC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	45	\$2,273.81	33%	75%	\$0.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	201.27	20	\$1,036.17	15%	75%	\$0.45	7,174	7,984	DEER
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	35.50	25	\$4,558.10	15%	75%	\$0.28	32	33	Developed from RTF - ResNewSFStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	188.96	14	\$1,224.11	31%	at stock turnover	\$0.15	108	103	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	96.23	5	\$500.00	15%	40%	\$0.97	34	35	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	New	17.51	1	\$12.00	0%	45%	\$0.06	15	16	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	New	154.91	10	\$295.58	40%	75%	\$0.25	84	85	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	124.06	2	\$175.00	7%	75%	\$0.72	59	66	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	115.69	14	\$380.73	65%	at stock turnover	\$0.41	104	93	BEST Simulation
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	New	98.26	2	\$175.00	4%	75%	\$0.18	36	38	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	683.60	14	-\$190.81	65%	at stock turnover	-\$0.43	3	3	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	New	199.81	15	\$730.80	15%	75%	\$0.39	177	184	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	6.89	20	\$39.50	35%	80%	\$0.03	5	5	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	0.00	20	\$601.43	30%	75%	\$0.00	0	0	Developed from RTF "ResSFDDuctSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	New	91.77	15	\$3,913.00	1%	75%	\$0.14	10	8	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	206.96	15	\$189.92	0%	at stock turnover	\$0.11	2	3	New Buildings Institute Study, 2006
Single Family	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	78.29	20	\$807.60	0%	at stock turnover	\$1.74	0	0	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	New	79.49	10	\$275.00	15%	25%	\$0.07	12	12	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	45	\$299.39	71%	75%	\$0.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Ceiling - R-49	Installation	New	0.00	45	\$698.57	30%	75%	\$0.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	New	46.22	20	\$640.82	79%	80%	\$0.12	0	1	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	New	91.03	45	\$2,278.67	76%	76%	\$0.31	1	1	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	New	-64.68	45	\$1,276.53	7%	75%	\$0.23	-67	-69	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	New	35.49	30	\$997.30	15%	75%	\$0.34	34	34	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,590.09	80%	80%	\$10.00	0	0	Developed from RTF "SFwX" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	New	36.31	25	\$3,034.92	2%	20%	\$0.63	10	10	BEST Simulation
Single Family	Cooling	Room AC - Evaporative Room AC	Installation	New	94.77	12	\$127.79	5%	at stock turnover	\$0.18	1	1	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	New	28.44	8	\$49.00	0%	50%	\$0.26	1	1	Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	New	29.22	5	\$698.88	15%	40%	\$4.40	10	11	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	45	\$2,273.81	47%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	221.41	20	\$1,036.17	15%	75%	\$0.40	195	202	DEER
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.70	1	\$12.00	0%	45%	\$0.05	737	850	OPower
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	5.52	5	\$15.30	15%	50%	\$0.64	5,525	6,166	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.92	5	\$33.39	1%	2%	\$0.54	40	40	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	Existing	126.99	4	\$0.03	34%	at stock turnover	\$0.00	652	867	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	Existing	10.45	8	\$0.01	131%	at stock turnover	\$0.00	145	135	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	Existing	78.46	5	\$0.01	131%	at stock turnover	\$0.00	5,838	6,544	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	14.91	5	\$0.01	88%	at stock turnover	\$0.00	89	100	ENERGY STAR Calc
Single Family	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	3.53	5	\$8.38	181%	at stock turnover	\$0.00	464	671	NCTA Agreement
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	48.89	10	\$21.37	234%	at stock turnover	\$0.07	2,765	2,497	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	New	1.57	1	\$12.00	0%	45%	\$0.07	24	25	OPower
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	5.34	5	\$15.30	15%	50%	\$0.65	143	152	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.41	5	\$2.59	1%	2%	\$0.04	1	1	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	New	76.76	4	\$0.02	57%	at stock turnover	\$0.00	32	40	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	New	12.92	8	\$0.01	106%	at stock turnover	\$0.00	4	3	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	New	95.94	5	\$0.01	107%	at stock turnover	\$0.00	144	158	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	10.13	5	\$0.01	130%	at stock turnover	\$0.00	4	4	ENERGY STAR Calc

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	3.75	5	\$8.89	226%	at stock turnover	\$0.00	17	24	NCTA Agreement
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	New	51.88	10	\$22.68	293%	at stock turnover	\$0.07	114	103	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	2.41	1	\$12.00	0%	45%	\$0.05	32	138	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	27.38	8	\$104.30	8%	50%	\$0.37	336	1,002	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	24.30	12	\$734.23	1%	30%	\$2.07	195	629	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	26.36	5	\$184.53	2%	50%	\$0.91	365	1,126	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	Existing	6.08	10	\$275.00	15%	25%	\$0.05	18	37	BEST Simulation
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	55.35	6	-\$1.98	100%	at stock turnover	-\$0.01	0	448	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	27.79	14	\$6.63	100%	at stock turnover	\$0.01	5,037	5,712	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	2.40	1	\$12.00	0%	45%	\$0.06	1	2	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	27.22	8	\$104.30	3%	50%	\$0.36	9	23	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	20.36	12	\$734.23	1%	30%	\$2.40	4	10	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	26.20	5	\$184.53	0%	50%	\$0.89	9	23	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	New	6.05	10	\$275.00	15%	25%	\$0.07	0	1	BEST Simulation
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	55.44	6	-\$1.98	100%	at stock turnover	-\$0.01	0	8	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	27.84	14	\$6.63	100%	at stock turnover	\$0.01	178	156	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	1,908.17	14	\$1,503.24	27%	at stock turnover	\$0.09	25,193	24,788	BEST Simulation
Single Family	Heating	Behavioral Programs - Program Participation	Installation	Existing	121.44	1	\$12.00	0%	45%	\$0.05	1,936	2,295	OPower
Single Family	Heating	Central Heat Pump - Maintenance	Installation	Existing	706.20	2	\$175.00	4%	75%	\$0.11	8,565	10,348	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	145.96	20	\$182.30	43%	80%	\$0.11	2,060	2,234	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	1,098.23	20	\$601.43	30%	75%	\$0.05	13,872	15,000	Developed from RTF "ResSF Duct Sealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	Existing	3,428.77	15	\$3,913.00	1%	75%	\$0.12	27,014	26,322	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	15%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	47.06	20	\$1,466.03	0%	at stock turnover	\$1.19	6	6	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	Existing	715.30	10	\$275.00	15%	25%	\$0.05	2,690	2,860	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	791.97	45	\$299.39	34%	75%	\$0.03	12,771	13,276	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-30	Installation	Existing	428.44	45	\$698.57	43%	75%	\$0.12	4,807	5,708	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	Existing	358.48	20	\$640.82	52%	60%	\$0.15	235	253	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	Existing	621.57	45	\$1,447.04	49%	60%	\$0.15	2,356	2,818	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	Existing	191.01	30	\$997.30	15%	75%	\$0.37	3,901	4,758	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,590.09	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,034.92	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$8,872.50	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	629.99	45	\$2,273.81	33%	75%	\$0.27	9,124	10,964	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	1,175.46	25	\$4,558.10	15%	75%	\$0.28	557	593	Developed from RTF - ResNewSFESStarWAlDmT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	947.29	14	\$1,409.68	31%	at stock turnover	\$0.15	542	517	BEST Simulation
Single Family	Heating	Behavioral Programs - Program Participation	Installation	New	87.31	1	\$12.00	0%	45%	\$0.06	42	45	OPower
Single Family	Heating	Central Heat Pump - Maintenance	Installation	New	356.92	2	\$175.00	4%	75%	\$0.18	122	136	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	128.38	20	\$39.50	35%	80%	\$0.03	47	50	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	831.94	20	\$601.43	30%	75%	\$0.07	291	306	Developed from RTF "ResSFductSealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	New	2,989.85	15	\$3,913.00	1%	75%	\$0.14	117	115	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	19%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	4.10	20	\$1,374.79	0%	at stock turnover	\$1.74	0	0	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	New	409.21	10	\$275.00	15%	25%	\$0.07	32	35	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	569.50	45	\$299.39	71%	75%	\$0.04	21	22	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-49	Installation	New	320.86	45	\$698.57	30%	75%	\$0.17	116	123	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	New	500.96	20	\$640.82	79%	80%	\$0.12	1	1	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	New	415.15	45	\$2,278.67	76%	76%	\$0.31	1	1	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	New	493.04	45	\$1,276.53	7%	75%	\$0.23	266	283	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	New	185.55	30	\$997.30	15%	75%	\$0.34	86	92	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,590.09	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	New	327.23	25	\$3,034.92	2%	20%	\$0.64	47	50	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$8,872.50	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	417.62	45	\$2,273.81	47%	75%	\$0.37	92	97	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESstarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	3.35	1	\$12.00	0%	45%	\$0.05	152	539	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	Existing	7.69	10	\$275.00	15%	25%	\$0.05	85	142	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	73.35	8	\$131.61	0%	10%	\$0.17	723	1,828	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.93	20	\$0.85	100%	at stock turnover	-\$0.22	563	600	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	22.78	6	-\$3.94	100%	at stock turnover	-\$0.05	0	1,114	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	11.44	14	\$4.38	100%	at stock turnover	\$0.02	12,529	14,208	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	15.76	6	-\$0.43	100%	at stock turnover	-\$0.03	0	986	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	7.91	14	\$5.01	100%	at stock turnover	-\$0.05	23,234	14,543	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	81.69	25	\$4,558.10	15%	75%	\$0.28	128	263	Developed from RTF - ResNewSFESstarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	3.46	1	\$12.00	0%	45%	\$0.06	5	11	OPower

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Interior Lighting	Home Energy Management System	Installation	New	8.00	10	\$275.00	15%	25%	\$0.07	2	4	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	75.80	8	\$148.07	0%	10%	\$0.17	18	39	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.93	20	\$0.85	100%	at stock turnover	-\$0.22	22	24	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	22.78	6	-\$3.94	100%	at stock turnover	-\$0.05	0	20	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	11.44	14	\$4.38	100%	at stock turnover	\$0.02	441	386	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	16.36	6	-\$0.43	100%	at stock turnover	-\$0.03	0	18	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	8.22	14	\$5.01	100%	at stock turnover	-\$0.05	817	425	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	14.13	1	\$12.00	0%	45%	\$0.05	1,683	1,531	OPower
Single Family	Miscellaneous	Furnace Fan - ECM	Installation	Existing	54.10	20	\$98.65	63%	at stock turnover	\$0.18	1,207	1,223	Illinois TRM
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	12%	at stock turnover	\$0.22	881	865	WAPA Fact Sheet
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.07	1,311	1,286	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	Existing	1,538.81	20	\$3,682.80	0%	30%	\$0.19	149	238	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	Existing	160.68	10	\$30.00	1%	75%	\$0.02	198	236	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	3%	at stock turnover	\$0.11	770	755	CEC 2000 Appliance Standards
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	14.79	1	\$12.00	0%	45%	\$0.07	55	51	OPower
Single Family	Miscellaneous	Furnace Fan - ECM	Installation	New	54.10	20	\$98.65	63%	at stock turnover	\$0.18	41	42	Illinois TRM
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	12%	at stock turnover	\$0.22	30	27	WAPA Fact Sheet
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.07	43	40	EnergySavers.gov

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	New	1,225.94	20	\$3,682.80	0%	30%	\$0.19	3	5	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	New	134.10	10	\$30.00	1%	75%	\$0.03	4	5	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	3%	at stock turnover	\$0.11	25	24	CEC 2000 Appliance Standards
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	43.07	1	\$12.00	0%	45%	\$0.05	723	1,010	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	Existing	1,215.21	20	\$1,117.41	0%	0%	\$0.08	145	170	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	307.29	40	\$600.05	1%	5%	\$0.15	495	574	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	232.01	9	\$16.00	34%	50%	\$0.01	3,048	3,877	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	216.89	10	\$26.82	51%	75%	\$0.02	4,263	5,471	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	129.73	15	\$30.00	11%	75%	\$0.02	3,334	4,333	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	Existing	1,486.21	20	\$5,783.33	1%	30%	\$0.35	17,323	20,128	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	Existing	72.00	5	\$121.01	15%	75%	\$0.35	1,472	2,272	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,800.05	16	\$1,000.97	66%	at stock turnover	\$0.06	23,607	23,892	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	5%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	New	32.64	1	\$12.00	0%	45%	\$0.06	14	15	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	New	980.82	20	\$1,117.41	0%	0%	\$0.08	2	2	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	247.92	40	\$585.52	1%	10%	\$0.15	17	18	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	New	175.87	9	\$16.00	43%	50%	\$0.01	17	18	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	166.40	10	\$26.82	65%	75%	\$0.02	25	26	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	New	100.87	15	\$30.00	11%	75%	\$0.03	48	51	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	New	1,155.98	20	\$5,783.33	1%	30%	\$0.35	247	262	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	New	58.11	5	\$121.01	15%	75%	\$0.35	25	27	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,800.05	16	\$1,000.97	40%	at stock turnover	\$0.06	513	516	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct . Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	5%	at stock turnover	\$10.00	0	0	BEST Simulation

Wyoming Residential Measure Assumptions

Table H-5 Table of Wyoming Residential Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.83	1	\$12.00	0%	14%	\$0.06	59	73	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	235.81	14	\$306.84	94%	at stock turnover	\$0.16	692	690	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.90	14	\$262.41	99%	at stock turnover	\$0.91	323	304	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	9.14	15	\$6.92	70%	at stock turnover	\$0.09	93	87	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	951.89	5	\$106.00	0%	5%	\$0.01	309	386	PacifiCorp Program Data
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.43	21	\$12.44	60%	at stock turnover	\$0.01	128	129	Developed from RTF "ResFreezer" v2.2 (11/2012)
Manufactured Home	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	100%	at stock turnover	\$1.24	49	47	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	97.07	17	\$71.90	100%	at stock turnover	\$0.08	140	141	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,056.18	7	\$106.00	0%	75%	\$0.01	1,932	2,311	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	182.27	17	\$76.00	21%	at stock turnover	\$0.05	112	113	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	Existing	0.89	17	\$112.36	30%	at stock turnover	\$14.11	1	1	DOE Report
Manufactured Home	Appliances	Behavioral Programs - Program Participation	Installation	New	5.45	1	\$12.00	0%	14%	\$0.06	6	7	OPower
Manufactured Home	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	235.81	14	\$306.84	94%	at stock turnover	\$0.16	92	91	AEO 2013
Manufactured Home	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.90	14	\$262.41	89%	at stock turnover	\$0.91	39	36	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Manufactured Home	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	9.14	15	\$6.92	70%	at stock turnover	\$0.09	11	10	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Manufactured Home	Appliances	Freezer - Decommissioning and Recycling	Installation	New	769.00	5	\$106.00	0%	5%	\$0.02	24	25	PacifiCorp Program Data
Manufactured Home	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.43	21	\$12.44	60%	at stock turnover	\$0.01	14	14	Developed from RTF "ResFreezer" v2.2 (11/2012)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	100%	at stock turnover	\$1.24	6	6	ENERGY STAR Calc
Manufactured Home	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	97.07	17	\$71.90	100%	at stock turnover	\$0.08	18	18	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	912.73	7	\$106.00	0%	75%	\$0.02	153	165	PacifiCorp Program Data
Manufactured Home	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	182.26	17	\$76.00	21%	at stock turnover	\$0.05	15	15	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Manufactured Home	Appliances	Stove / Oven - Convection	Installation	New	0.89	17	\$112.36	30%	at stock turnover	\$14.11	0	0	DOE Report
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	135.04	14	\$1,107.58	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	47.15	5	\$500.00	15%	40%	\$1.65	84	126	Hawaii TRM
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	Existing	10.41	1	\$12.00	0%	14%	\$0.06	15	17	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	Existing	92.50	10	\$295.58	40%	75%	\$0.42	304	353	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	70.88	2	\$175.00	7%	75%	\$0.89	73	104	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	98.22	14	\$344.48	16%	at stock turnover	\$0.44	288	225	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	379.76	14	-\$209.91	37%	at stock turnover	-\$0.50	140	116	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	Existing	150.99	15	\$976.73	15%	75%	\$0.61	610	983	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	6.87	20	\$182.30	2%	80%	\$0.14	55	60	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	55.32	18	\$419.03	29%	75%	\$0.02	51	55	Developed from RTF "ResSFDuctSealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	180.57	15	\$3,643.00	0%	75%	\$0.14	664	422	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	161.10	15	\$134.58	37%	at stock turnover	\$0.10	377	375	New Buildings Institute Study, 2006

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	41.72	20	\$730.72	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	Existing	49.87	10	\$275.00	15%	25%	\$0.04	51	55	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	-0.85	25	\$254.84	66%	75%	\$0.04	-1	-1	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-30	Installation	Existing	39.79	25	\$594.62	19%	75%	\$0.05	230	249	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	Existing	36.57	20	\$640.82	48%	60%	\$1.70	4	10	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	Existing	59.63	25	\$707.88	36%	60%	\$0.08	143	158	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	Existing	26.51	25	\$848.89	15%	75%	\$0.43	146	180	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,258.25	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$2,754.40	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	Existing	327.82	12	\$416.42	16%	at stock turnover	\$0.17	111	112	BEST Simulation
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	Existing	114.55	8	\$49.00	0%	50%	\$0.07	175	180	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	Existing	46.70	5	\$698.88	15%	40%	\$2.46	82	125	PG&E Document "PGECOHVC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	207.92	25	\$718.22	7%	75%	\$0.60	1,297	1,627	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	165.03	20	\$948.42	15%	75%	\$0.51	904	1,121	DEER
Manufactured Home	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	33.29	25	\$4,558.10	15%	75%	\$0.20	23	25	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	121.43	14	\$944.59	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	44.88	5	\$500.00	15%	40%	\$1.72	13	13	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Behavioral Programs - Program Participation	Installation	New	10.52	1	\$12.00	0%	14%	\$0.06	2	2	OPower
Manufactured Home	Cooling	Ceiling Fan - Installation	Installation	New	66.43	10	\$295.58	40%	75%	\$0.42	26	28	BEST Simulation
Manufactured Home	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	51.09	2	\$175.00	7%	75%	\$1.18	12	12	BEST Simulation
Manufactured Home	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	91.31	14	\$293.79	33%	at stock turnover	\$0.40	61	49	BEST Simulation
Manufactured Home	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	242.09	14	-\$159.21	44%	at stock turnover	-\$0.64	14	12	AEG research & analysis
Manufactured Home	Cooling	Cool Roofs	Installation	New	179.52	15	\$867.09	15%	75%	\$0.41	122	131	PG&E Study: Residential Cool Roof
Manufactured Home	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	2.20	20	\$39.50	0%	80%	\$0.03	2	2	BEST Simulation
Manufactured Home	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	23.28	18	\$419.03	28%	75%	\$0.04	4	4	Developed from RTF "ResSF Duct Sealing" v2.3
Manufactured Home	Cooling	Ductless Mini Split Heat Pump	Installation	New	186.42	15	\$3,643.00	0%	75%	\$0.14	63	48	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	177.21	15	\$134.58	44%	at stock turnover	\$0.09	61	62	New Buildings Institute Study, 2006
Manufactured Home	Cooling	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	New	143.90	20	\$1,246.38	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Home Energy Management System	Installation	New	45.22	10	\$275.00	15%	25%	\$0.12	5	6	BEST Simulation
Manufactured Home	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$254.84	75%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ceiling - R-49	Installation	New	20.13	25	\$594.62	57%	75%	\$0.08	4	5	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Ducting - R-8	Installation	New	33.62	20	\$640.82	48%	80%	\$0.06	4	4	BEST Simulation
Manufactured Home	Cooling	Insulation - Floor - R-19	Installation	New	58.56	25	\$1,415.76	66%	75%	\$0.16	6	6	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Radiant Barrier	Installation	New	35.08	25	\$848.89	15%	75%	\$0.33	24	26	ORNL.gov Calculator
Manufactured Home	Cooling	Insulation - Wall Cavity - R-11	Installation	New	1.83	25	\$3,258.25	68%	80%	\$1.74	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Insulation - Wall Sheathing	Installation	New	11.33	25	\$2,754.40	15%	20%	\$0.52	1	1	BEST Simulation
Manufactured Home	Cooling	Room AC - Evaporative Room AC	Installation	New	259.41	12	\$416.42	16%	at stock turnover	\$0.22	13	13	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Cooling	Room AC - Removal of Second Unit	Installation	New	104.21	8	\$49.00	0%	50%	\$0.00	0	0	Missouri TRM
Manufactured Home	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Cooling	Whole-House Fan - Installation	Installation	New	44.20	5	\$698.88	15%	40%	\$2.29	12	13	PG&E Document "PGECOHC134 Whole House Fan"
Manufactured Home	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	246.81	25	\$718.22	55%	75%	\$0.41	55	60	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	216.93	20	\$948.42	15%	75%	\$0.39	149	161	DEER
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.60	1	\$12.00	0%	14%	\$0.06	38	47	OPower
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	4.39	5	\$13.02	15%	50%	\$0.68	767	895	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.97	5	\$33.39	1%	2%	\$0.54	9	9	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	Existing	343.22	4	\$0.08	49%	at stock turnover	\$0.00	201	268	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	Existing	16.23	8	\$0.01	75%	at stock turnover	\$0.00	18	17	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	Existing	121.88	5	\$0.01	75%	at stock turnover	\$0.00	722	809	ENERGY STAR Calc
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	18.37	5	\$0.01	78%	at stock turnover	\$0.00	17	19	ENERGY STAR Calc
Manufactured Home	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	4.84	5	\$11.47	173%	at stock turnover	\$0.00	95	138	NCTA Agreement
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	59.37	10	\$24.88	220%	at stock turnover	\$0.06	453	405	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Manufactured Home	Electronics	Behavioral Programs - Program Participation	Installation	New	1.56	1	\$12.00	0%	14%	\$0.06	4	5	OPower
Manufactured Home	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	4.50	5	\$13.02	15%	50%	\$0.68	69	75	Developed from RTF "ResAdvancedPowerStrips" v1.5
Manufactured Home	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	1	1	Energy Star Calculator
Manufactured Home	Electronics	Laptop - ENERGY STAR	unit	New	237.88	4	\$0.05	49%	at stock turnover	\$0.00	23	27	ENERGY STAR Calc
Manufactured Home	Electronics	Monitor - ENERGY STAR	unit	New	15.01	8	\$0.01	75%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc
Manufactured Home	Electronics	Personal Computers - ENERGY STAR	unit	New	110.57	5	\$0.01	75%	at stock turnover	\$0.00	82	88	ENERGY STAR Calc

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	16.67	5	\$0.01	78%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc
Manufactured Home	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	3.83	5	\$9.09	173%	at stock turnover	\$0.00	11	14	NCTA Agreement
Manufactured Home	Electronics	TVs - ENERGY STAR (5.1)	unit	New	47.06	10	\$19.72	220%	at stock turnover	\$0.06	58	54	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.90	1	\$12.00	0%	14%	\$0.06	1	3	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	10.22	8	\$39.33	7%	50%	\$0.37	28	82	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	9.05	12	\$276.84	1%	30%	\$2.10	16	50	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	Existing	9.83	5	\$69.58	0%	50%	\$0.92	30	92	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	Existing	2.28	10	\$275.00	15%	25%	\$0.04	1	3	BEST Simulation
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	53.85	6	-\$1.98	100%	at stock turnover	-\$0.01	0	60	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	27.04	14	\$6.63	100%	at stock turnover	\$0.01	301	609	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.85	1	\$12.00	0%	14%	\$0.06	0	0	OPower
Manufactured Home	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	9.73	8	\$39.33	11%	50%	\$0.39	2	5	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	7.26	12	\$276.84	1%	30%	\$2.62	1	3	AEG research & analysis
Manufactured Home	Exterior Lighting	Exterior Lighting - Timeclock Installation	Installation	New	9.36	5	\$69.58	3%	50%	\$0.96	3	6	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Manufactured Home	Exterior Lighting	Home Energy Management System	Installation	New	2.17	10	\$275.00	15%	25%	\$0.12	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	53.94	6	-\$1.98	100%	at stock turnover	-\$0.01	0	3	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	27.08	14	\$6.63	100%	at stock turnover	\$0.01	72	48	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	2,095.81	14	\$1,106.25	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	Existing	131.66	1	\$12.00	0%	14%	\$0.06	51	58	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	123.84	20	\$182.30	2%	80%	\$0.14	263	279	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	1,569.63	18	\$419.03	29%	75%	\$0.02	1,698	1,698	Developed from RTF "ResSFductSealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	Existing	3,222.42	15	\$3,643.00	0%	75%	\$0.14	831	1,105	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	18%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	81.73	20	\$1,124.80	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	Existing	852.48	10	\$275.00	15%	25%	\$0.04	236	241	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	585.65	25	\$254.84	66%	75%	\$0.04	144	149	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-30	Installation	Existing	1,128.66	25	\$594.62	19%	75%	\$0.05	1,746	1,814	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	Existing	404.01	20	\$640.82	48%	60%	\$1.70	108	117	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	Existing	763.18	25	\$707.88	36%	60%	\$0.08	488	523	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	Existing	149.18	25	\$848.89	15%	75%	\$0.43	237	261	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,258.25	40%	40%	\$10.00	0	0	Developed from RTF "SFwx" v2.4 7/2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$2,754.40	15%	15%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$8,760.00	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	-150.70	25	\$718.22	7%	75%	\$0.60	-269	-297	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	2,042.61	25	\$4,558.10	15%	75%	\$0.20	520	519	Developed from RTF - ResNewSFESstarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	1,337.56	14	\$917.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Manufactured Home	Heating	Behavioral Programs - Program Participation	Installation	New	139.06	1	\$12.00	0%	14%	\$0.06	11	11	OPower
Manufactured Home	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	2%	75%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	126.01	20	\$39.50	0%	80%	\$0.03	43	43	BEST Simulation
Manufactured Home	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	1,036.65	18	\$419.03	28%	75%	\$0.04	197	197	Developed from RTF "ResSFDuctSealing" v2.3
Manufactured Home	Heating	Ductless Mini Split Heat Pump	Installation	New	3,369.47	15	\$3,643.00	0%	75%	\$0.14	39	44	Developed from RTF DHP_UES v1.5 (under review)
Manufactured Home	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	36%	at stock turnover	\$10.00	0	0	AEO 2013
Manufactured Home	Heating	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	New	-272.74	20	\$1,918.58	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Home Energy Management System	Installation	New	881.75	10	\$275.00	15%	25%	\$0.12	35	36	BEST Simulation
Manufactured Home	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$254.84	75%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ceiling - R-49	Installation	New	698.70	25	\$594.62	57%	75%	\$0.08	54	54	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Ducting - R-8	Installation	New	640.42	20	\$640.82	48%	80%	\$0.06	83	83	BEST Simulation
Manufactured Home	Heating	Insulation - Floor - R-19	Installation	New	782.20	25	\$1,415.76	66%	75%	\$0.16	28	28	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Foundation - R-10	Installation	New	0.00	45	\$1,276.53	0%	0%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Heating	Insulation - Radiant Barrier	Installation	New	187.25	25	\$848.89	15%	75%	\$0.33	47	47	ORNL.gov Calculator
Manufactured Home	Heating	Insulation - Wall Cavity - R-11	Installation	New	156.04	25	\$3,258.25	68%	80%	\$1.74	8	8	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Heating	Insulation - Wall Sheathing	Installation	New	435.17	25	\$2,754.40	15%	20%	\$0.52	9	9	BEST Simulation
Manufactured Home	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$8,760.00	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Manufactured Home	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Manufactured Home	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Manufactured Home	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	-124.91	25	\$718.22	55%	75%	\$0.41	-10	-10	Developed from RTF "SFWx" v2.4 7/2011
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMDT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.87	1	\$12.00	0%	14%	\$0.06	6	21	OPower
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	Existing	4.74	10	\$275.00	15%	25%	\$0.04	10	19	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	41.05	8	\$124.18	0%	10%	\$0.29	86	222	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.35	20	\$0.85	100%	at stock turnover	-\$0.32	300	195	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	24.17	6	-\$4.00	100%	at stock turnover	-\$0.05	0	262	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	12.14	14	\$4.45	100%	at stock turnover	\$0.02	1,675	2,728	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	19.15	6	-\$0.42	100%	at stock turnover	-\$0.02	0	175	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	9.61	14	\$4.95	100%	at stock turnover	-\$0.03	2,221	1,877	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	43.09	25	\$4,558.10	15%	75%	\$0.20	57	107	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Manufactured Home	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	1.67	1	\$12.00	0%	14%	\$0.06	1	1	OPower
Manufactured Home	Interior Lighting	Home Energy Management System	Installation	New	4.68	10	\$275.00	15%	25%	\$0.12	1	2	BEST Simulation
Manufactured Home	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	40.58	8	\$124.18	0%	10%	\$0.28	7	14	DEER
Manufactured Home	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.35	20	\$0.85	100%	at stock turnover	-\$0.32	75	48	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	24.17	6	-\$4.00	100%	at stock turnover	-\$0.05	0	10	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	12.14	14	\$4.45	100%	at stock turnover	\$0.02	372	201	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	19.88	6	-\$0.42	100%	at stock turnover	-\$0.02	0	10	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	9.98	14	\$4.95	100%	at stock turnover	-\$0.04	435	202	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	4.52	1	\$12.00	0%	14%	\$0.06	32	37	OPower
Manufactured Home	Miscellaneous	Furnace Fan - ECM	Installation	Existing	62.92	20	\$98.65	89%	at stock turnover	\$0.15	411	418	Illinois TRM
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	11%	at stock turnover	\$0.22	181	178	WAPA Fact Sheet
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	4.69	1	\$12.00	0%	14%	\$0.06	4	4	OPower

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Miscellaneous	Furnace Fan - ECM	Installation	New	62.92	20	\$98.65	89%	at stock turnover	\$0.15	56	57	Illinois TRM
Manufactured Home	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	11%	at stock turnover	\$0.22	24	23	WAPA Fact Sheet
Manufactured Home	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Manufactured Home	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Manufactured Home	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Manufactured Home	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	36.58	1	\$12.00	0%	14%	\$0.06	20	26	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	271.58	40	\$478.25	1%	5%	\$0.14	42	48	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	217.15	9	\$8.00	28%	50%	\$0.01	378	467	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	201.40	10	\$26.82	41%	75%	\$0.02	525	655	Developed from RTF "ResShowerheads" v2.1
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	118.98	15	\$30.00	11%	75%	\$0.03	292	371	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	Existing	1,379.81	20	\$5,783.33	0%	30%	\$0.37	1,581	1,833	6th Plan
Manufactured Home	Water Heating	Water Heater - Timer	Installation	Existing	58.21	5	\$121.01	15%	75%	\$0.40	123	180	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,626.39	16	\$1,000.97	29%	at stock turnover	\$0.07	2,447	2,475	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Manufactured Home	Water Heating	Behavioral Programs - Program Participation	Installation	New	35.80	1	\$12.00	0%	14%	\$0.06	2	3	OPower
Manufactured Home	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Manufactured Home	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	274.67	40	\$478.25	1%	10%	\$0.13	8	10	6th Plan
Manufactured Home	Water Heating	Water Heater - Faucet Aerators	fixture	New	208.45	9	\$8.00	28%	50%	\$0.01	30	35	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	194.51	10	\$26.82	42%	75%	\$0.02	41	49	Developed from RTF "ResShowerheads" v2.1

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Manufactured Home	Water Heating	Water Heater - Pipe Insulation	Installation	New	115.66	15	\$30.00	11%	75%	\$0.03	24	29	Illinois TRM
Manufactured Home	Water Heating	Water Heater - Solar System	Installation	New	1,344.43	20	\$5,783.33	0%	30%	\$0.38	131	155	6th Plan
Manufactured Home	Water Heating	Water Heater - Timer	Installation	New	56.59	5	\$121.01	15%	75%	\$0.40	11	13	http://michaelbluejay.com/electricity/waterheaters.html
Manufactured Home	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,626.39	16	\$1,000.97	29%	at stock turnover	\$0.07	334	335	BEST Simulation
Manufactured Home	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	0%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.50	1	\$12.00	0%	14%	\$0.24	64	74	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	223.32	14	\$306.84	66%	at stock turnover	\$0.17	642	641	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	35.47	14	\$262.41	66%	at stock turnover	\$0.92	269	252	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	9.13	15	\$6.92	68%	at stock turnover	\$0.09	108	101	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	951.90	5	\$106.00	0%	5%	\$0.01	199	248	PacifiCorp Program Data
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.43	21	\$12.44	32%	at stock turnover	\$0.01	82	83	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	97%	at stock turnover	\$1.24	60	57	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	97.07	17	\$71.90	100%	at stock turnover	\$0.08	170	171	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,056.18	7	\$106.00	0%	75%	\$0.01	335	401	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	182.27	17	\$76.00	3%	at stock turnover	\$0.05	19	20	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	Existing	0.91	17	\$112.36	82%	at stock turnover	\$13.90	4	4	DOE Report
Multifamily	Appliances	Behavioral Programs - Program Participation	Installation	New	5.21	1	\$12.00	0%	14%	\$0.16	7	7	OPower
Multifamily	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	223.32	14	\$306.84	66%	at stock turnover	\$0.17	84	83	AEO 2013
Multifamily	Appliances	Clothes Washer - MEF 3.2	Installation	New	35.47	14	\$262.41	59%	at stock turnover	\$0.92	31	28	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Multifamily	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	9.13	15	\$6.92	68%	at stock turnover	\$0.09	13	12	Developed from RTF "ResDishwasher" v2.2 (12/2012)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Appliances	Freezer - Decommissioning and Recycling	Installation	New	769.00	5	\$106.00	0%	5%	\$0.02	15	16	PacifiCorp Program Data
Multifamily	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.43	21	\$12.44	32%	at stock turnover	\$0.01	9	9	Developed from RTF "ResFreezer" v2.2 (11/2012)
Multifamily	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	97%	at stock turnover	\$1.24	8	7	ENERGY STAR Calc
Multifamily	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	97.07	17	\$71.90	100%	at stock turnover	\$0.08	22	22	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	912.80	7	\$106.00	0%	75%	\$0.02	27	29	PacifiCorp Program Data
Multifamily	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	182.27	17	\$76.00	3%	at stock turnover	\$0.05	3	3	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Multifamily	Appliances	Stove / Oven - Convection	Installation	New	0.91	17	\$112.36	82%	at stock turnover	\$13.90	1	1	DOE Report
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	48.71	14	\$386.55	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	24.06	5	\$500.00	2%	10%	\$4.12	11	14	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	Existing	4.14	1	\$12.00	0%	14%	\$0.25	4	4	OPower
Multifamily	Cooling	Ceiling Fan - Installation	Installation	Existing	34.66	10	\$295.58	40%	75%	\$1.07	69	83	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	30.07	2	\$175.00	1%	75%	\$2.78	43	49	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	40.09	14	\$361.92	13%	at stock turnover	\$1.12	69	57	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	0%	75%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	30.31	14	-\$271.64	9%	at stock turnover	-\$7.03	3	3	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	Existing	0.00	15	\$833.00	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	0.00	20	\$182.30	74%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	4.46	18	\$419.03	30%	75%	\$1.05	4	5	Developed from RTF "ResSFDuctSealing" v2.3

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	55.95	15	\$3,643.00	1%	75%	\$0.47	198	128	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	77.64	15	\$90.28	9%	at stock turnover	\$0.14	37	39	New Buildings Institute Study, 2006
Multifamily	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	15.07	20	\$255.02	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	Existing	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.00	25	\$170.96	50%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-30	Installation	Existing	0.00	25	\$398.91	26%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	Existing	4.44	20	\$640.82	2%	60%	\$12.70	5	6	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	Existing	24.01	25	\$474.90	13%	60%	\$0.18	73	80	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	Existing	0.00	30	\$569.50	15%	75%	\$0.00	0	0	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$381.10	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$322.17	15%	15%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Room AC - EER 11.5	Installation	Existing	13.15	12	\$270.96	13%	at stock turnover	\$2.80	13	13	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	Existing	118.16	8	\$49.00	0%	50%	\$0.07	184	184	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Whole-House Fan - Installation	Installation	Existing	23.97	5	\$698.88	2%	10%	\$5.76	11	14	PG&E Document "PGECOHC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$753.55	26%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	58.86	20	\$343.39	33%	75%	\$0.53	145	176	DEER
Multifamily	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	38.21	25	\$4,558.10	15%	75%	\$2.74	17	18	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	44.85	14	\$349.84	0%	at stock turnover	\$0.00	0	0	BEST Simulation

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Multifamily	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	22.09	5	\$500.00	2%	10%	\$4.18	1	2	Hawaii TRM
Multifamily	Cooling	Behavioral Programs - Program Participation	Installation	New	4.05	1	\$12.00	0%	14%	\$0.16	1	1	OPower
Multifamily	Cooling	Ceiling Fan - Installation	Installation	New	29.25	10	\$295.58	40%	75%	\$1.20	8	9	BEST Simulation
Multifamily	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	26.11	2	\$175.00	1%	75%	\$2.94	7	7	BEST Simulation
Multifamily	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	36.89	14	\$371.98	27%	at stock turnover	\$1.25	21	18	BEST Simulation
Multifamily	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	0%	75%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	0.47	14	-\$281.69	11%	at stock turnover	-\$407.23	0	0	AEG research & analysis
Multifamily	Cooling	Cool Roofs	Installation	New	0.00	15	\$739.50	15%	25%	\$10.00	0	0	PG&E Study: Residential Cool Roof
Multifamily	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	80%	80%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	1.61	18	\$419.03	30%	75%	\$21.84	0	0	Developed from RTF "ResSFductSealing" v2.3
Multifamily	Cooling	Ductless Mini Split Heat Pump	Installation	New	55.31	15	\$3,643.00	6%	75%	\$0.57	16	12	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	85.41	15	\$90.28	11%	at stock turnover	\$0.13	9	9	New Buildings Institute Study, 2006
Multifamily	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	14.23	20	\$230.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Home Energy Management System	Installation	New	0.00	10	\$275.00	15%	25%	\$0.00	0	0	BEST Simulation
Multifamily	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	0.00	25	\$170.96	73%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ceiling - R-49	Installation	New	0.00	25	\$398.91	17%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Ducting - R-8	Installation	New	3.18	20	\$640.82	13%	80%	\$16.23	1	1	BEST Simulation
Multifamily	Cooling	Insulation - Floor - R-19	Installation	New	23.45	25	\$949.80	30%	75%	\$0.44	8	9	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Foundation - R-10	Installation	New	0.95	45	\$1,276.53	43%	75%	\$0.70	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Radiant Barrier	Installation	New	0.00	30	\$569.50	15%	75%	\$0.00	0	0	ORNL.gov Calculator
Multifamily	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$381.10	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Insulation - Wall Sheathing	Installation	New	0.00	25	\$322.17	15%	20%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Cooling	Room AC - EER 11.5	Installation	New	12.83	12	\$278.49	13%	at stock turnover	\$2.95	2	2	BEST Simulation
Multifamily	Cooling	Room AC - Removal of Second Unit	Installation	New	105.86	8	\$49.00	0%	50%	\$0.08	14	14	Missouri TRM
Multifamily	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Cooling	Whole-House Fan - Installation	Installation	New	21.98	5	\$698.88	2%	10%	\$5.85	1	2	PG&E Document "PGECOHC134 Whole House Fan"
Multifamily	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$753.55	37%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	63.89	20	\$343.39	53%	75%	\$0.49	11	12	DEER
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.63	1	\$12.00	0%	14%	\$0.25	42	51	OPower
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	2.95	5	\$8.74	15%	50%	\$0.68	563	649	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.97	5	\$33.39	1%	2%	\$0.54	11	11	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	Existing	468.90	4	\$0.11	108%	at stock turnover	\$0.00	538	714	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	Existing	22.17	8	\$0.02	62%	at stock turnover	\$0.00	18	17	ENERGY STAR Calc
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	Existing	166.51	5	\$0.02	62%	at stock turnover	\$0.00	722	810	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	23.92	5	\$0.02	53%	at stock turnover	\$0.00	14	16	ENERGY STAR Calc
Multifamily	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	5.50	5	\$13.05	116%	at stock turnover	\$0.00	78	112	NCTA Agreement
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	83.32	10	\$32.89	165%	at stock turnover	\$0.06	437	391	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Multifamily	Electronics	Behavioral Programs - Program Participation	Installation	New	1.60	1	\$12.00	0%	14%	\$0.16	5	5	OPower
Multifamily	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	3.05	5	\$8.74	15%	50%	\$0.67	51	55	Developed from RTF "ResAdvancedPowerStrips" v1.5
Multifamily	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	1	1	Energy Star Calculator
Multifamily	Electronics	Laptop - ENERGY STAR	unit	New	323.88	4	\$0.07	108%	at stock turnover	\$0.00	60	72	ENERGY STAR Calc
Multifamily	Electronics	Monitor - ENERGY STAR	unit	New	15.52	8	\$0.01	62%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Electronics	Personal Computers - ENERGY STAR	unit	New	126.26	5	\$0.01	62%	at stock turnover	\$0.00	82	88	ENERGY STAR Calc
Multifamily	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	18.14	5	\$0.01	53%	at stock turnover	\$0.00	2	2	ENERGY STAR Calc
Multifamily	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	6.03	5	\$14.29	116%	at stock turnover	\$0.00	9	11	NCTA Agreement
Multifamily	Electronics	TVs - ENERGY STAR (5.1)	unit	New	91.23	10	\$36.02	165%	at stock turnover	\$0.06	56	52	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	0.87	1	\$12.00	0%	14%	\$0.24	1	4	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	9.94	8	\$35.91	1%	50%	\$0.35	37	111	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	8.74	12	\$252.77	1%	30%	\$1.97	18	59	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timelock Installation	Installation	Existing	9.49	5	\$63.53	1%	50%	\$0.86	35	108	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	Existing	2.11	10	\$275.00	15%	25%	\$0.34	2	3	BEST Simulation
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	58.74	6	-\$2.02	100%	at stock turnover	-\$0.01	0	86	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	29.49	14	\$6.75	100%	at stock turnover	\$0.01	448	880	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	0.94	1	\$12.00	0%	14%	\$0.16	0	0	OPower
Multifamily	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	10.70	8	\$35.91	0%	50%	\$0.32	4	9	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	7.86	12	\$252.77	1%	30%	\$2.18	2	4	AEG research & analysis
Multifamily	Exterior Lighting	Exterior Lighting - Timelock Installation	Installation	New	10.15	5	\$63.53	0%	50%	\$0.80	4	8	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Multifamily	Exterior Lighting	Home Energy Management System	Installation	New	2.26	10	\$275.00	15%	25%	\$0.47	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	58.83	6	-\$2.02	100%	at stock turnover	-\$0.01	0	3	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	29.54	14	\$6.75	100%	at stock turnover	\$0.01	79	55	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	379.54	14	\$165.47	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	Existing	38.92	1	\$12.00	0%	14%	\$0.24	34	42	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	0%	75%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	124.95	20	\$182.30	74%	80%	\$1.23	54	55	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	0.00	18	\$419.03	30%	75%	\$0.00	0	0	Developed from RTF "ResSFDuctSealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	Existing	942.60	15	\$3,643.00	1%	75%	\$0.47	3,422	4,592	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	0%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	13.14	20	\$168.24	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	Existing	105.37	10	\$275.00	15%	25%	\$0.34	66	69	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	300.17	25	\$170.96	50%	75%	\$0.06	490	507	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-30	Installation	Existing	296.58	25	\$398.91	26%	75%	\$0.13	929	974	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	Existing	0.00	20	\$640.82	2%	60%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	Existing	225.22	25	\$474.90	13%	60%	\$0.18	680	727	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	7%	7%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	Existing	147.89	30	\$569.50	15%	75%	\$0.34	555	607	ORNL.gov Calculator
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$381.10	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$322.17	15%	15%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$2,699.69	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	0.00	25	\$753.55	26%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	382.74	25	\$4,558.10	15%	75%	\$2.70	131	129	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	215.91	14	\$145.58	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Behavioral Programs - Program Participation	Installation	New	32.81	1	\$12.00	0%	14%	\$0.16	3	3	OPower
Multifamily	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	0%	75%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	0.00	20	\$39.50	80%	80%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	0.00	18	\$419.03	30%	75%	\$0.00	0	0	Developed from RTF "ResSFDuctSealing" v2.3
Multifamily	Heating	Ductless Mini Split Heat Pump	Installation	New	772.37	15	\$3,643.00	6%	75%	\$0.57	231	261	Developed from RTF DHP_UES v1.5 (under review)
Multifamily	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	0%	at stock turnover	\$10.00	0	0	AEO 2013
Multifamily	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	New	2.05	20	\$152.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Home Energy Management System	Installation	New	50.56	10	\$275.00	15%	25%	\$0.48	3	3	BEST Simulation
Multifamily	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	354.34	25	\$170.96	73%	75%	\$0.05	4	4	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Ceiling - R-49	Installation	New	100.67	25	\$398.91	17%	75%	\$0.38	32	32	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Ducting - R-8	Installation	New	0.00	20	\$640.82	13%	80%	\$0.00	0	0	BEST Simulation
Multifamily	Heating	Insulation - Floor - R-19	Installation	New	180.97	25	\$949.80	30%	75%	\$0.44	45	45	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Foundation - R-10	Installation	New	122.93	45	\$1,276.53	43%	75%	\$0.70	22	22	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Radiant Barrier	Installation	New	189.40	30	\$569.50	15%	75%	\$0.29	63	63	ORNL.gov Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$381.10	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Heating	Insulation - Wall Sheathing	Installation	New	324.29	25	\$322.17	15%	20%	\$0.10	9	9	BEST Simulation
Multifamily	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$2,699.69	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Multifamily	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Multifamily	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Multifamily	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	0.00	25	\$753.55	37%	75%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Multifamily	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESstarWAIDMT v2.2 (Rev 2/2012, Average used)
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	1.11	1	\$12.00	0%	14%	\$0.24	4	16	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	Existing	2.81	10	\$275.00	15%	25%	\$0.34	8	13	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	26.80	8	\$53.32	0%	10%	\$0.06	68	173	DEER
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	1.93	20	\$0.85	100%	at stock turnover	-\$0.22	319	247	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	22.92	6	-\$3.96	100%	at stock turnover	-\$0.05	0	404	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	11.51	14	\$4.40	100%	at stock turnover	\$0.02	2,450	4,208	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	15.83	6	-\$0.42	100%	at stock turnover	-\$0.03	0	75	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	7.95	14	\$4.92	100%	at stock turnover	-\$0.04	998	814	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Advanced New Construction Designs -	Installation	New	31.26	25	\$4,558.10	15%	75%	\$2.63	50	92	Developed from RTF - ResNewSFESstarWAIDMT v2.2 (Rev 2/2012, Average used)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
		ENERGY STAR Home Design											
Multifamily	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	1.21	1	\$12.00	0%	14%	\$0.16	1	1	OPower
Multifamily	Interior Lighting	Home Energy Management System	Installation	New	3.06	10	\$275.00	15%	25%	\$0.48	1	2	BEST Simulation
Multifamily	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	29.41	8	\$53.32	2%	10%	\$0.06	6	11	DEER
Multifamily	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	1.93	20	\$0.85	100%	at stock turnover	-\$0.22	57	44	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	22.92	6	-\$3.96	100%	at stock turnover	-\$0.05	0	13	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	11.51	14	\$4.40	100%	at stock turnover	\$0.02	400	238	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	16.44	6	-\$0.42	100%	at stock turnover	-\$0.03	0	3	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	8.25	14	\$4.92	100%	at stock turnover	-\$0.05	146	70	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	2.54	1	\$12.00	0%	14%	\$0.25	19	20	OPower
Multifamily	Miscellaneous	Furnace Fan - ECM	Installation	Existing	40.11	20	\$98.65	44%	at stock turnover	\$0.24	156	159	Illinois TRM
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	Existing	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	Existing	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	2.72	1	\$12.00	0%	14%	\$0.16	2	2	OPower
Multifamily	Miscellaneous	Furnace Fan - ECM	Installation	New	40.11	20	\$98.65	44%	at stock turnover	\$0.24	21	22	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	0%	at stock turnover	\$0.00	0	0	WAPA Fact Sheet
Multifamily	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	0%	at stock turnover	\$0.00	0	0	EnergySavers.gov
Multifamily	Miscellaneous	Pool Heater - Solar System	Installation	New	0.00	20	\$3,682.80	0%	30%	\$10.00	0	0	AEG research & analysis
Multifamily	Miscellaneous	Pool Pump - Timer	Installation	New	0.00	10	\$30.00	0%	75%	\$10.00	0	0	Ontario Power TRM
Multifamily	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	0%	at stock turnover	\$0.00	0	0	CEC 2000 Appliance Standards
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	21.44	1	\$12.00	0%	14%	\$0.25	28	39	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	Existing	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	256.00	40	\$478.25	1%	5%	\$0.14	95	111	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	133.97	9	\$8.00	12%	50%	\$0.01	961	1,208	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	121.81	10	\$13.41	18%	75%	\$0.01	1,303	1,671	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	69.86	15	\$30.00	11%	75%	\$0.04	415	548	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	Existing	795.14	20	\$5,783.33	1%	30%	\$0.61	2,122	2,504	6th Plan
Multifamily	Water Heating	Water Heater - Timer	Installation	Existing	58.97	5	\$121.01	15%	75%	\$0.40	326	438	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,016.04	16	\$1,000.97	55%	at stock turnover	\$0.11	3,490	3,531	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	4%	at stock turnover	\$10.00	0	0	BEST Simulation
Multifamily	Water Heating	Behavioral Programs - Program Participation	Installation	New	20.65	1	\$12.00	0%	14%	\$0.16	3	4	OPower
Multifamily	Water Heating	Water Heater - Desuperheater	Installation	New	0.00	20	\$1,117.41	0%	0%	\$10.00	0	0	Developed from RTF "ResGSHP" v2.2
Multifamily	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	256.65	40	\$478.25	1%	10%	\$0.14	18	22	6th Plan
Multifamily	Water Heating	Water Heater - Faucet Aerators	fixture	New	127.68	9	\$8.00	8%	50%	\$0.01	85	101	Illinois TRM
Multifamily	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	116.73	10	\$13.41	13%	75%	\$0.02	116	138	Developed from RTF "ResShowerheads" v2.1
Multifamily	Water Heating	Water Heater - Pipe Insulation	Installation	New	67.49	15	\$30.00	11%	75%	\$0.04	34	41	Illinois TRM
Multifamily	Water Heating	Water Heater - Solar System	Installation	New	768.29	20	\$5,783.33	1%	30%	\$0.62	176	210	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Multifamily	Water Heating	Water Heater - Timer	Installation	New	58.70	5	\$121.01	15%	75%	\$0.40	28	33	http://michaelbluejay.com/electricity/waterheaters.html
Multifamily	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,016.04	16	\$1,000.97	55%	at stock turnover	\$0.11	482	484	BEST Simulation
Multifamily	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	4%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	Existing	5.70	1	\$12.00	0%	14%	\$0.04	330	406	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	Existing	208.60	14	\$306.84	93%	at stock turnover	\$0.18	3,024	3,017	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	Existing	36.13	14	\$262.41	100%	at stock turnover	\$0.90	1,613	1,515	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	Existing	7.95	15	\$6.92	84%	at stock turnover	\$0.10	479	447	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	Existing	951.89	5	\$106.00	0%	5%	\$0.01	1,991	2,489	PacifiCorp Program Data
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	Existing	92.43	21	\$12.44	78%	at stock turnover	\$0.01	825	832	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	Existing	8.56	15	\$88.95	100%	at stock turnover	\$1.24	244	232	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	97.07	17	\$71.90	100%	at stock turnover	\$0.08	693	698	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	Existing	1,056.18	7	\$106.00	0%	75%	\$0.01	11,372	13,604	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	Existing	182.27	17	\$76.00	25%	at stock turnover	\$0.05	659	664	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	Existing	1.26	17	\$112.36	81%	at stock turnover	\$10.04	23	24	DOE Report
Single Family	Appliances	Behavioral Programs - Program Participation	Installation	New	5.32	1	\$12.00	0%	14%	\$0.04	36	38	OPower
Single Family	Appliances	Clothes Dryer - Heat Pump Dryer (EF 7.47)	Installation	New	208.60	14	\$306.84	93%	at stock turnover	\$0.18	401	398	AEO 2013
Single Family	Appliances	Clothes Washer - MEF 3.2	Installation	New	36.13	14	\$262.41	90%	at stock turnover	\$0.90	195	181	Developed from RTF "ResClothesWashersSF" (v4.0, 10/2013)
Single Family	Appliances	Dishwasher - CEE Tier 1 (180-295 kWh/yr)	Installation	New	7.95	15	\$6.92	84%	at stock turnover	\$0.10	57	53	Developed from RTF "ResDishwasher" v2.2 (12/2012)
Single Family	Appliances	Freezer - Decommissioning and Recycling	Installation	New	769.00	5	\$106.00	0%	5%	\$0.02	153	164	PacifiCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Appliances	Freezer - Energy Star Tier 4 (25-30% above standard)	Installation	New	92.43	21	\$12.44	78%	at stock turnover	\$0.01	93	93	Developed from RTF "ResFreezer" v2.2 (11/2012)
Single Family	Appliances	Microwave - Efficient	Installation	New	8.56	15	\$88.95	100%	at stock turnover	\$1.24	32	29	ENERGY STAR Calc
Single Family	Appliances	Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	97.07	17	\$71.90	100%	at stock turnover	\$0.08	90	90	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Refrigerator - Decommissioning and Recycling	Installation	New	912.80	7	\$106.00	0%	75%	\$0.02	902	973	PacifiCorp Program Data
Single Family	Appliances	Second Refrigerator - CEE Tier 3 (30-35% above standard)	Installation	New	182.27	17	\$76.00	25%	at stock turnover	\$0.05	85	85	Developed from RTF "ResRefrigerators" v2.2 (4/2013)
Single Family	Appliances	Stove / Oven - Convection	Installation	New	1.26	17	\$112.36	81%	at stock turnover	\$10.04	3	3	DOE Report
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	181.75	14	\$1,438.02	1%	at stock turnover	\$0.05	120	119	BEST Simulation
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	Existing	62.14	5	\$500.00	15%	40%	\$1.38	502	697	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	Existing	12.72	1	\$12.00	0%	14%	\$0.04	77	88	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	Existing	113.57	10	\$295.58	40%	75%	\$0.36	1,604	1,809	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	Existing	98.26	2	\$175.00	7%	75%	\$0.77	769	1,111	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	Existing	114.74	14	\$410.17	24%	at stock turnover	\$0.44	1,726	1,413	BEST Simulation
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	Existing	429.68	14	-\$212.72	22%	at stock turnover	-\$0.54	464	384	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	Existing	166.54	15	\$910.08	15%	75%	\$0.59	3,949	4,542	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	Existing	5.93	20	\$182.30	43%	80%	\$0.14	89	103	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	Existing	58.29	20	\$601.43	30%	75%	\$0.03	444	475	Developed from RTF "ResSFDuctSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	Existing	165.45	15	\$3,643.00	1%	75%	\$0.09	2,105	1,384	Developed from RTF DHP_UES v1.5 (under review)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Evaporative Cooling - Indirect / Direct	Installation	Existing	188.14	15	\$197.46	22%	at stock turnover	\$0.13	853	883	New Buildings Institute Study, 2006
Single Family	Cooling	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	56.06	20	\$948.73	0%	at stock turnover	\$0.89	9	10	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	Existing	65.43	10	\$275.00	15%	25%	\$0.03	279	298	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	0.00	45	\$373.91	34%	75%	\$0.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Ceiling - R-30	Installation	Existing	31.59	45	\$872.45	43%	75%	\$0.07	433	473	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	Existing	38.63	20	\$640.82	52%	60%	\$0.06	51	55	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	Existing	71.48	45	\$1,807.22	49%	60%	\$0.10	317	365	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	Existing	26.92	30	\$1,245.53	15%	75%	\$0.62	602	764	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,589.97	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,034.82	3%	3%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Room AC - Evaporative Room AC	Installation	Existing	282.92	12	\$322.49	12%	at stock turnover	\$0.15	347	352	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	Existing	107.32	8	\$49.00	0%	50%	\$0.07	642	615	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	Existing	61.53	5	\$698.88	15%	40%	\$1.93	491	690	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	294.70	45	\$2,662.63	33%	75%	\$0.76	4,435	5,931	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	Existing	167.86	20	\$1,213.36	15%	75%	\$0.63	3,731	4,770	DEER
Single Family	Cooling	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	34.17	25	\$4,558.10	15%	75%	\$0.65	75	98	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Cooling	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	166.77	14	\$1,301.46	1%	at stock turnover	\$0.08	15	15	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Attic Fan - Photovoltaic - Installation	Installation	New	64.74	5	\$500.00	15%	40%	\$1.20	81	87	Hawaii TRM
Single Family	Cooling	Behavioral Programs - Program Participation	Installation	New	14.34	1	\$12.00	0%	14%	\$0.04	14	15	OPower
Single Family	Cooling	Ceiling Fan - Installation	Installation	New	114.77	10	\$295.58	40%	75%	\$0.35	209	222	BEST Simulation
Single Family	Cooling	Central AC - Maintenance and Tune-Up	Installation	New	77.86	2	\$175.00	7%	75%	\$0.81	137	141	BEST Simulation
Single Family	Cooling	Central AC - SEER 14 (Energy Star)	Installation	New	123.39	14	\$379.50	48%	at stock turnover	\$0.38	536	459	BEST Simulation
Single Family	Cooling	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Convert CAC to Evap AC - Indirect / Direct Evaporative AC	Conversion	New	530.38	14	-\$205.41	26%	at stock turnover	-\$0.33	90	74	AEG research & analysis
Single Family	Cooling	Cool Roofs	Installation	New	206.15	15	\$807.93	15%	75%	\$0.41	642	684	PG&E Study: Residential Cool Roof
Single Family	Cooling	Doors - Storm and Thermal - R-5 Door	Installation	New	2.20	20	\$39.50	35%	80%	\$0.20	5	5	BEST Simulation
Single Family	Cooling	Ducting - Repair and Sealing - Sealed	Installation	New	28.59	20	\$601.43	30%	75%	\$0.04	35	36	Developed from RTF "ResSFductSealing" v2.3
Single Family	Cooling	Ductless Mini Split Heat Pump	Installation	New	179.58	15	\$3,643.00	1%	75%	\$0.10	201	157	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Cooling	Evaporative Cooling - Indirect / Direct	Installation	New	206.96	15	\$174.09	26%	at stock turnover	\$0.10	168	186	New Buildings Institute Study, 2006
Single Family	Cooling	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	New	203.52	20	\$1,717.28	0%	at stock turnover	\$10.00	5	5	BEST Simulation
Single Family	Cooling	Home Energy Management System	Installation	New	71.16	10	\$275.00	15%	25%	\$0.03	37	39	BEST Simulation
Single Family	Cooling	Infiltration Control - 0.1 ACH Reduction	Installation	New	-3.30	45	\$373.91	71%	75%	\$0.25	-1	-1	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Ceiling - R-49	Installation	New	16.09	45	\$872.45	30%	75%	\$0.12	37	39	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Ducting - R-8	Installation	New	40.63	20	\$640.82	79%	80%	\$0.05	1	1	BEST Simulation
Single Family	Cooling	Insulation - Floor - R-19	Installation	New	79.59	45	\$2,845.85	76%	76%	\$0.16	2	2	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Foundation - R-10	Installation	New	3.58	45	\$1,276.53	7%	75%	\$0.11	12	13	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Radiant Barrier	Installation	New	26.66	30	\$1,245.53	15%	75%	\$0.51	82	87	ORNL.gov Calculator
Single Family	Cooling	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,589.97	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Insulation - Wall Sheathing	Installation	New	25.62	25	\$3,034.82	2%	20%	\$2.14	18	23	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Cooling	Room AC - EER 11.5	Installation	New	36.01	12	\$167.87	12%	at stock turnover	\$0.63	16	16	BEST Simulation
Single Family	Cooling	Room AC - Removal of Second Unit	Installation	New	94.36	8	\$49.00	0%	50%	\$0.08	50	47	Missouri TRM
Single Family	Cooling	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Cooling	Whole-House Fan - Installation	Installation	New	63.77	5	\$698.88	15%	40%	\$1.83	80	86	PG&E Document "PGECOHC134 Whole House Fan"
Single Family	Cooling	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	403.74	45	\$2,662.63	47%	75%	\$0.42	592	629	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Cooling	Windows - Install Reflective Film - Reflective Coating	Installation	New	184.95	20	\$1,213.36	15%	75%	\$0.50	571	607	DEER
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	Existing	1.68	1	\$12.00	0%	14%	\$0.04	236	283	OPower
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	Existing	6.60	5	\$19.11	15%	50%	\$0.63	6,811	7,839	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	Existing	14.97	5	\$33.39	1%	2%	\$0.54	41	43	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	Existing	126.99	4	\$0.03	121%	at stock turnover	\$0.00	2,450	3,255	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	Existing	10.45	8	\$0.01	94%	at stock turnover	\$0.00	111	103	ENERGY STAR Calc
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	Existing	78.46	5	\$0.01	94%	at stock turnover	\$0.00	4,464	5,003	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	Existing	14.91	5	\$0.01	103%	at stock turnover	\$0.00	110	124	ENERGY STAR Calc
Single Family	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	Existing	3.53	5	\$8.38	162%	at stock turnover	\$0.00	442	639	NCTA Agreement
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	Existing	55.41	10	\$21.37	231%	at stock turnover	\$0.06	2,564	2,294	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Electronics	Behavioral Programs - Program Participation	Installation	New	1.64	1	\$12.00	0%	14%	\$0.04	26	29	OPower
Single Family	Electronics	Electronics - Smart Power Strips - Load Sensing Strip	unit	New	6.79	5	\$19.11	15%	50%	\$0.87	612	665	Developed from RTF "ResAdvancedPowerStrips" v1.5
Single Family	Electronics	ENERGY STAR Battery Chargers	Installation	New	16.50	5	\$2.59	1%	2%	\$0.04	4	4	Energy Star Calculator
Single Family	Electronics	Laptop - ENERGY STAR	unit	New	76.76	4	\$0.02	121%	at stock turnover	\$0.00	275	329	ENERGY STAR Calc
Single Family	Electronics	Monitor - ENERGY STAR	unit	New	12.92	8	\$0.01	94%	at stock turnover	\$0.00	13	11	ENERGY STAR Calc

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Electronics	Personal Computers - ENERGY STAR	unit	New	95.94	5	\$0.01	94%	at stock turnover	\$0.00	508	543	ENERGY STAR Calc
Single Family	Electronics	Printer/Fax/Copier - ENERGY STAR	unit	New	10.13	5	\$0.01	103%	at stock turnover	\$0.00	13	13	ENERGY STAR Calc
Single Family	Electronics	Set-top Boxes/DVR - ENERGY STAR	unit	New	3.75	5	\$8.89	162%	at stock turnover	\$0.00	50	63	NCTA Agreement
Single Family	Electronics	TVs - ENERGY STAR (5.1)	unit	New	58.80	10	\$22.68	231%	at stock turnover	\$0.06	331	304	PG&E Document "PGECOAPP104 Energy Efficient Televisions"
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	Existing	2.39	1	\$12.00	0%	14%	\$0.04	11	46	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	Existing	27.27	8	\$104.30	8%	50%	\$0.37	357	1,063	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	Existing	24.19	12	\$734.23	1%	30%	\$2.09	207	667	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timelock Installation	Installation	Existing	26.25	5	\$184.53	2%	50%	\$0.91	387	1,194	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	Existing	6.07	10	\$275.00	15%	25%	\$0.03	19	40	BEST Simulation
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	54.92	6	-\$1.98	100%	at stock turnover	-\$0.01	0	881	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	Existing	27.58	14	\$6.63	100%	at stock turnover	\$0.01	4,875	9,148	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Behavioral Programs - Program Participation	Installation	New	2.29	1	\$12.00	0%	14%	\$0.04	1	3	OPower
Single Family	Exterior Lighting	Exterior Lighting - Photosensor Control	Installation	New	26.07	8	\$104.30	3%	50%	\$0.38	38	80	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	Installation	New	19.23	12	\$734.23	1%	30%	\$2.59	17	36	AEG research & analysis
Single Family	Exterior Lighting	Exterior Lighting - Timelock Installation	Installation	New	24.86	5	\$184.53	0%	50%	\$0.95	38	80	http://www.greenyour.com/office/office-space/office-lighting/tips/control-office-lighting-with-timers-and-motion-sensors
Single Family	Exterior Lighting	Home Energy Management System	Installation	New	5.81	10	\$275.00	15%	25%	\$0.03	2	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Exterior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	55.01	6	-\$1.98	100%	at stock turnover	-\$0.01	0	18	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Exterior Lighting	Screw-in LED - LED (58.9 lm/W)	lamp	New	27.62	14	\$6.63	100%	at stock turnover	\$0.01	405	314	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFStarWAIMT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	Existing	3,306.48	14	\$1,436.30	1%	at stock turnover	\$0.05	2,174	2,151	BEST Simulation
Single Family	Heating	Behavioral Programs - Program Participation	Installation	Existing	213.18	1	\$12.00	0%	14%	\$0.04	260	292	OPower
Single Family	Heating	Central Heat Pump - Maintenance	Installation	Existing	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	Existing	115.71	20	\$182.30	43%	80%	\$0.14	350	394	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	Existing	2,212.33	20	\$601.43	30%	75%	\$0.03	3,765	3,920	Developed from RTF "ResSF Duct Sealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	Existing	5,364.67	15	\$3,643.00	1%	75%	\$0.09	15,118	19,253	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	Existing	0.00	17	\$0.00	4%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Geothermal Heat Pump - EER 16.1 / COP 3.5	Installation	Existing	114.08	20	\$1,460.39	0%	at stock turnover	\$0.89	19	20	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	Existing	1,394.03	10	\$275.00	15%	25%	\$0.03	1,191	1,221	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	Existing	571.86	45	\$373.91	34%	75%	\$0.41	1,732	2,118	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-30	Installation	Existing	1,014.12	45	\$872.45	43%	75%	\$0.07	2,806	2,943	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	Existing	609.53	20	\$640.82	52%	60%	\$0.06	128	130	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	Existing	1,120.21	45	\$1,807.22	49%	60%	\$0.10	1,006	1,126	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	Existing	0.00	45	\$1,276.53	2%	2%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	Existing	140.35	30	\$1,245.53	15%	75%	\$0.62	678	774	ORNL.gov Calculator
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	Existing	0.00	25	\$3,589.97	40%	40%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	Existing	0.00	25	\$3,034.82	3%	3%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	Existing	0.00	40	\$10,548.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	Existing	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	Existing	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	Existing	-115.59	45	\$2,662.63	33%	75%	\$0.76	-390	-447	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	New	2,741.84	25	\$4,558.10	15%	75%	\$0.65	1,253	1,269	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Heating	Air-Source Heat Pump - SEER 22, Ductless w/ Var. Ref.	Installation	New	1,873.21	14	\$1,263.66	1%	at stock turnover	\$0.08	172	169	BEST Simulation
Single Family	Heating	Behavioral Programs - Program Participation	Installation	New	202.47	1	\$12.00	0%	14%	\$0.04	29	29	OPower
Single Family	Heating	Central Heat Pump - Maintenance	Installation	New	0.00	2	\$175.00	4%	75%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Doors - Storm and Thermal - R-5 Door	Installation	New	107.95	20	\$39.50	35%	80%	\$0.20	33	35	BEST Simulation
Single Family	Heating	Ducting - Repair and Sealing - Sealed	Installation	New	1,398.27	20	\$601.43	30%	75%	\$0.04	350	357	Developed from RTF "ResSFDuctSealing" v2.3
Single Family	Heating	Ductless Mini Split Heat Pump	Installation	New	5,139.52	15	\$3,643.00	1%	75%	\$0.10	622	700	Developed from RTF DHP_UES v1.5 (under review)
Single Family	Heating	Electric Furnace - Standard	Installation	New	0.00	17	\$0.00	8%	at stock turnover	\$10.00	0	0	AEO 2013
Single Family	Heating	Geothermal Heat Pump - EER 23 / COP 4.3	Installation	New	-388.48	20	\$2,643.40	0%	at stock turnover	\$10.00	-9	0	BEST Simulation
Single Family	Heating	Home Energy Management System	Installation	New	1,416.10	10	\$275.00	15%	25%	\$0.03	108	110	BEST Simulation
Single Family	Heating	Infiltration Control - 0.1 ACH Reduction	Installation	New	816.30	45	\$373.91	71%	75%	\$0.25	25	27	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ceiling - R-49	Installation	New	532.67	45	\$872.45	30%	75%	\$0.12	183	184	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Ducting - R-8	Installation	New	896.52	20	\$640.82	79%	80%	\$0.05	3	3	BEST Simulation
Single Family	Heating	Insulation - Floor - R-19	Installation	New	957.35	45	\$2,845.85	76%	76%	\$0.16	3	3	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Foundation - R-10	Installation	New	906.04	45	\$1,276.53	7%	75%	\$0.11	473	477	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Radiant Barrier	Installation	New	152.86	30	\$1,245.53	15%	75%	\$0.51	77	74	ORNL.gov Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Heating	Insulation - Wall Cavity - R-11	Installation	New	0.00	25	\$3,589.97	80%	80%	\$10.00	0	0	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Heating	Insulation - Wall Sheathing	Installation	New	548.68	25	\$3,034.82	2%	20%	\$2.14	77	78	BEST Simulation
Single Family	Heating	Solar Pre-heater for Ventilation Air	Installation	New	0.00	40	\$10,548.75	0%	0%	\$10.00	0	0	http://www.wbdg.org/resources/svap.php
Single Family	Heating	Space Heating - Heat Recovery Ventilator	Installation	New	0.00	5	\$1,750.00	0%	0%	\$10.00	0	0	http://www.aceee.org/files/proceedings/2010/data/papers/1925.pdf
Single Family	Heating	Thermostat - Clock/Programmable - Programmable Thermostat	Installation	New	0.00	10	\$30.00	45%	45%	\$10.00	0	0	BEST Simulation
Single Family	Heating	Windows - High Efficiency/ENERGY STAR - U-0.22 Window	Installation	New	-3.78	45	\$2,662.63	47%	75%	\$0.42	-1	-1	Developed from RTF "SFWx" v2.4 7/2011
Single Family	Interior Lighting	Advanced New Construction Designs - ENERGY STAR Home Design	Installation	Existing	0.00	25	\$4,558.10	0%	0%	\$10.00	0	0	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	Existing	3.24	1	\$12.00	0%	14%	\$0.04	55	185	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	Existing	9.01	10	\$275.00	15%	25%	\$0.03	98	177	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	Existing	78.21	8	\$141.43	0%	10%	\$0.17	838	2,061	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	Existing	2.24	20	\$0.85	100%	at stock turnover	-\$0.19	1,518	921	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	Existing	25.56	6	-\$3.94	100%	at stock turnover	-\$0.04	0	1,415	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	Existing	12.83	14	\$4.38	100%	at stock turnover	\$0.02	12,220	15,462	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	Existing	13.03	6	-\$0.43	100%	at stock turnover	-\$0.04	0	2,312	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	Existing	6.54	14	\$5.01	100%	at stock turnover	-\$0.05	32,178	25,340	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Advanced New Construction Designs -	Installation	New	82.69	25	\$4,558.10	15%	75%	\$0.64	557	998	Developed from RTF - ResNewSFESStarWAIDMT v2.2 (Rev 2/2012, Average used)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
		ENERGY STAR Home Design											
Single Family	Interior Lighting	Behavioral Programs - Program Participation	Installation	New	3.20	1	\$12.00	0%	14%	\$0.04	7	12	OPower
Single Family	Interior Lighting	Home Energy Management System	Installation	New	8.98	10	\$275.00	15%	25%	\$0.03	9	17	BEST Simulation
Single Family	Interior Lighting	Interior Lighting - Occupancy Sensors	Installation	New	77.89	8	\$141.43	0%	10%	\$0.13	80	147	DEER
Single Family	Interior Lighting	Linear Fluorescent - HE T8 (91.4 lm/W)	lamp	New	2.24	20	\$0.85	100%	at stock turnover	-\$0.19	137	82	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in CFL - CFL (58.8 lm/W)	lamp	New	25.56	6	-\$3.94	100%	at stock turnover	-\$0.04	0	27	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Screw-in LED - LED (70.2 lm/W)	lamp	New	12.83	14	\$4.38	100%	at stock turnover	\$0.02	959	530	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty CFL - CFL (55.3 lm/W)	lamp	New	13.53	6	-\$0.43	100%	at stock turnover	-\$0.04	0	62	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Interior Lighting	Specialty LED - LED (59 lm/W)	lamp	New	6.80	14	\$5.01	100%	at stock turnover	-\$0.06	2,233	1,163	Developed from RTF - ResLEDLighting v3.12 and ResLightingCFL v3.0, EIA 2011 for future LED
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	Existing	5.85	1	\$12.00	0%	14%	\$0.04	185	232	OPower
Single Family	Miscellaneous	Furnace Fan - ECM	Installation	Existing	115.61	20	\$98.65	70%	at stock turnover	\$0.08	2,947	2,997	Illinois TRM
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	Existing	194.87	15	\$350.00	9%	at stock turnover	\$0.22	748	734	WAPA Fact Sheet
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	Existing	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.07	1,163	1,141	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	Existing	1,544.54	20	\$3,682.80	0%	30%	\$0.19	133	212	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	Existing	152.93	10	\$30.00	1%	75%	\$0.03	166	199	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	Existing	618.56	15	\$579.00	3%	at stock turnover	\$0.11	683	670	CEC 2000 Appliance Standards
Single Family	Miscellaneous	Behavioral Programs - Program Participation	Installation	New	5.99	1	\$12.00	0%	14%	\$0.04	21	24	OPower
Single Family	Miscellaneous	Furnace Fan - ECM	Installation	New	115.61	20	\$98.65	70%	at stock turnover	\$0.08	401	409	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Miscellaneous	Hot Tub / Spa - Improved Controls and Pumps	Installation	New	194.87	15	\$350.00	9%	at stock turnover	\$0.22	97	93	WAPA Fact Sheet
Single Family	Miscellaneous	Pool Heater - Heat Pump (COP = 5.0)	Installation	New	4,331.30	15	\$2,550.00	1%	at stock turnover	\$0.07	152	145	EnergySavers.gov
Single Family	Miscellaneous	Pool Heater - Solar System	Installation	New	1,375.50	20	\$3,682.80	0%	30%	\$0.19	10	16	AEG research & analysis
Single Family	Miscellaneous	Pool Pump - Timer	Installation	New	145.82	10	\$30.00	1%	75%	\$0.03	13	16	Ontario Power TRM
Single Family	Miscellaneous	Pool Pump - Two-Speed	Installation	New	618.56	15	\$579.00	3%	at stock turnover	\$0.11	89	85	CEC 2000 Appliance Standards
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	Existing	39.63	1	\$12.00	0%	14%	\$0.04	80	109	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	Existing	1,148.76	20	\$1,117.41	0%	0%	\$0.09	48	57	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	Existing	294.09	40	\$600.05	1%	5%	\$0.16	165	195	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	Existing	230.75	9	\$16.00	34%	50%	\$0.01	1,066	1,375	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	Existing	215.71	10	\$26.82	51%	75%	\$0.02	1,491	1,940	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	Existing	128.90	15	\$30.00	11%	75%	\$0.02	1,165	1,534	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	Existing	1,494.19	20	\$5,783.33	1%	30%	\$0.36	6,083	7,186	6th Plan
Single Family	Water Heating	Water Heater - Timer	Installation	Existing	63.24	5	\$121.01	15%	75%	\$0.36	492	744	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	Existing	1,800.32	16	\$1,000.97	19%	at stock turnover	\$0.06	8,295	8,392	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	Existing	0.00	16	\$0.00	3%	at stock turnover	\$10.00	0	0	BEST Simulation
Single Family	Water Heating	Behavioral Programs - Program Participation	Installation	New	39.68	1	\$12.00	0%	14%	\$0.04	9	11	OPower
Single Family	Water Heating	Water Heater - Desuperheater	Installation	New	1,188.51	20	\$1,117.41	0%	0%	\$0.09	4	5	Developed from RTF "ResGSHP" v2.2
Single Family	Water Heating	Water Heater - Drainwater Heat Recovery	Installation	New	304.19	40	\$585.52	1%	10%	\$0.15	33	40	6th Plan
Single Family	Water Heating	Water Heater - Faucet Aerators	fixture	New	222.58	9	\$16.00	43%	50%	\$0.01	36	43	Illinois TRM
Single Family	Water Heating	Water Heater - Low-Flow Showerheads - 1.5 gpm	fixture	New	210.90	10	\$26.82	65%	75%	\$0.02	51	61	Developed from RTF "ResShowerheads" v2.1
Single Family	Water Heating	Water Heater - Pipe Insulation	Installation	New	128.20	15	\$30.00	11%	75%	\$0.03	99	119	Illinois TRM
Single Family	Water Heating	Water Heater - Solar System	Installation	New	1,488.90	20	\$5,783.33	1%	30%	\$0.36	522	624	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Single Family	Water Heating	Water Heater - Timer	Installation	New	62.91	5	\$121.01	15%	75%	\$0.37	45	54	http://michaelbluejay.com/electricity/waterheaters.html
Single Family	Water Heating	Water Heater <= 55 Gal - EF 2.2 (HP)	Installation	New	1,800.31	16	\$1,000.97	19%	at stock turnover	\$0.06	1,241	1,248	BEST Simulation
Single Family	Water Heating	Water Heater > 55 Gal - EF 2.2 (HP)	Installation	New	0.00	16	\$0.00	3%	at stock turnover	\$10.00	0	0	BEST Simulation

Commercial Measures

California Commercial Measure Assumptions

Table H-6 Table of California Commercial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	28,089.13	23	\$254,174.81	5%	at stock turnover	\$0.13	4	3	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft College bldg.	Existing	25,365.29	23	\$39,530.00	49%	at stock turnover	\$0.16	36	37	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	15,159.35	10	\$813.00	15%	75%	\$0.01	35	40	BEST Simulation
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	3,955.22	15	\$1,167.00	15%	75%	\$0.03	9	10	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	Existing	840.39	15	\$3,510.00	15%	75%	\$0.38	2	2	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	12,878.39	15	\$23,400.00	45%	85%	\$0.48	31	37	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	Existing	16,239.89	12	\$13,500.00	15%	25%	\$0.10	12	14	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	2,886.96	10	\$4,500.00	15%	35%	\$0.07	4	5	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	Existing	4,858.28	15	\$9,525.00	20%	65%	\$0.06	16	18	BEST Simulation
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	Existing	6,860.58	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	24,760.07	23	\$208,963.74	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	2,458.83	18	\$93.00	15%	50%	\$0.01	6	7	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	Existing	19,107.56	10	\$28,842.00	18%	75%	\$0.19	35	43	DEER
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	4,996.90	50	\$75,000.00	15%	25%	\$0.73	3	5	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	1,850.30	45	\$40,800.00	15%	35%	\$0.19	3	3	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	7,962.44	20	\$246.00	15%	35%	\$0.01	12	13	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	4,732.22	45	\$31,200.00	15%	35%	\$0.17	7	8	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	3,071.55	20	\$10,500.00	15%	50%	\$0.08	8	9	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	-1,767.10	45	\$23,130.00	15%	35%	\$0.10	-3	-3	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	Existing	10,231.33	15	\$42,294.74	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	Existing	5,205.27	3	\$18,300.00	10%	75%	\$0.29	23	27	6th Plan
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	Existing	9,235.31	23	\$50,151.74	29%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	Existing	0.00	15	\$126,822.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	3,790.47	3	\$9,525.00	3%	29%	\$0.20	7	10	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	Existing	48,120.19	23	\$59,810.61	12%	at stock turnover	\$0.13	2	2	BEST Simulation
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	12,745.19	10	\$813.00	15%	75%	\$0.01	7	9	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	Existing	17,499.78	4	\$813.00	15%	75%	\$0.01	9	12	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	5,413.73	15	\$1,167.00	15%	75%	\$0.02	3	4	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	Existing	872.37	15	\$5,367.00	15%	75%	\$0.52	0	1	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$85,893.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	15,999.45	20	\$120,000.00	10%	30%	\$0.11	4	4	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	25,368.06	23	\$260,381.55	6%	at stock turnover	\$0.15	1	1	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft College bldg.	New	15,609.84	23	\$34,115.59	55%	at stock turnover	\$0.23	9	9	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	9,574.85	10	\$813.00	15%	75%	\$0.01	4	4	BEST Simulation
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	3,672.47	15	\$1,167.00	15%	75%	\$0.03	1	1	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	New	477.48	15	\$3,510.00	15%	75%	\$0.61	0	0	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	New	3,051.09	3	\$28,800.00	10%	75%	\$0.54	2	3	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	2,424.35	15	\$23,400.00	45%	85%	\$4.36	1	1	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	New	9,538.67	12	\$13,500.00	15%	25%	\$0.16	1	1	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	1,741.85	10	\$4,500.00	15%	50%	\$0.08	1	1	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	New	2,943.73	15	\$9,525.00	20%	65%	\$0.07	2	2	BEST Simulation
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	New	6,860.58	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	22,370.06	23	\$214,066.46	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	1,242.48	18	\$93.00	15%	35%	\$0.09	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	New	10,932.45	10	\$28,842.00	18%	75%	\$0.32	1	1	DEER
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	2,977.43	50	\$75,000.00	15%	25%	\$1.20	0	0	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	-423.15	45	\$40,800.00	15%	50%	\$0.61	0	0	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	4,355.90	20	\$246.00	15%	50%	\$0.01	2	2	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	2,776.31	45	\$31,200.00	15%	50%	\$0.19	1	1	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	1,841.14	20	\$10,500.00	15%	50%	\$0.10	1	1	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	-212.14	45	\$23,130.00	15%	50%	\$0.14	0	0	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	New	8,881.17	15	\$43,813.78	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	New	8,344.43	23	\$51,376.40	33%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	New	0.00	15	\$126,822.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	New	2,378.55	3	\$9,525.00	3%	29%	\$0.24	1	1	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	New	33,308.55	23	\$51,618.37	14%	at stock turnover	\$0.16	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	6,675.28	10	\$813.00	15%	75%	\$0.02	1	1	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	New	9,408.35	4	\$813.00	15%	75%	\$0.02	1	1	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	4,525.55	15	\$1,167.00	15%	75%	\$0.03	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	New	479.18	15	\$5,367.00	15%	75%	\$0.97	0	0	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$85,893.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	131.33	15	\$9,525.00	20%	65%	\$0.06	1	2	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	347.68	5	\$11,814.00	15%	25%	\$5.83	1	1	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	267.10	10	\$3,333.00	33%	60%	\$1.33	1	2	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	Existing	2,037.74	10	\$5,220.00	15%	30%	\$0.30	5	10	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	127.02	15	-\$8.53	100%	at stock turnover	-\$0.03	0	0	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	161.95	15	\$67.57	100%	at stock turnover	\$0.01	10	9	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	34.90	15	\$6.23	100%	at stock turnover	\$0.03	33	34	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	8.62	15	\$1.28	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	129.00	3	\$18,300.00	10%	75%	\$0.29	1	2	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	30.94	6	\$1.12	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	25.18	15	\$20.34	100%	at stock turnover	\$0.05	0	0	EIA 2011
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	112.72	3	\$9,525.00	3%	29%	\$0.20	1	1	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	649.15	20	\$120,000.00	10%	30%	\$0.11	0	0	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	New	104.72	3	\$28,800.00	10%	75%	\$0.54	0	0	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	117.53	15	\$9,525.00	20%	65%	\$0.07	0	0	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	New	304.13	5	\$11,814.00	15%	25%	\$6.29	0	0	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	264.98	10	\$3,333.00	44%	60%	\$1.26	0	0	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	New	1,806.99	10	\$5,220.00	15%	30%	\$0.32	1	1	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	127.02	15	-\$8.53	100%	at stock turnover	-\$0.03	0	0	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	161.95	15	\$67.57	100%	at stock turnover	\$0.01	2	2	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	34.90	15	\$6.23	100%	at stock turnover	\$0.03	6	6	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	8.62	15	\$1.28	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	30.94	6	\$1.12	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	25.18	15	\$20.34	100%	at stock turnover	\$0.05	0	0	EIA 2011
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	98.69	3	\$9,525.00	3%	29%	\$0.24	0	0	BEST Simulation
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	Existing	14,264.35	15	\$76.86	21%	at stock turnover	\$0.00	6	6	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,453.77	10	\$81.64	21%	at stock turnover	\$0.01	2	2	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	Existing	2,464.59	18	\$346.44	21%	at stock turnover	\$0.02	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	Existing	2,617.47	10	\$183.74	21%	at stock turnover	\$0.01	3	2	Developed from RTF "ComCookingConvectionOven" v2.0
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	New	14,264.35	15	\$107.60	29%	at stock turnover	\$0.00	2	2	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	New	1,453.77	10	\$114.29	29%	at stock turnover	\$0.01	1	1	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	New	2,464.59	18	\$485.02	29%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	New	2,617.47	10	\$257.24	29%	at stock turnover	\$0.01	1	1	Developed from RTF "ComCookingConvectionOven" v2.0
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	11,572.36	23	\$48,078.19	5%	at stock turnover	\$0.13	1	1	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	-9,377.07	15	\$23,400.00	45%	85%	\$0.48	-10	-10	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	6,528.27	10	\$4,500.00	15%	35%	\$0.07	4	4	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	90,582.47	15	\$3,573.00	15%	25%	\$0.00	24	24	Developed from RTF
College	Heating	Energy Management System	per 30,000 sqft College bldg.	Existing	10,990.15	15	\$9,525.00	20%	65%	\$0.06	15	16	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	19,674.78	23	\$48,562.72	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	-2,149.41	18	\$93.00	15%	50%	\$0.01	-2	-2	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	15,604.66	45	\$40,800.00	15%	35%	\$0.19	9	10	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	-3,168.62	20	\$246.00	15%	35%	\$0.01	-2	-2	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	10,692.04	45	\$31,200.00	15%	35%	\$0.17	6	7	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	8,464.24	20	\$10,500.00	15%	50%	\$0.08	9	9	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	21,335.01	45	\$23,130.00	15%	35%	\$0.10	13	13	BEST Simulation
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	Existing	12,576.75	3	\$18,300.00	10%	75%	\$0.30	24	26	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	Existing	0.00	14	\$100,344.00	3%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	9,159.23	3	\$9,525.00	3%	29%	\$0.20	7	8	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$85,893.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	58,580.39	20	\$120,000.00	10%	30%	\$0.11	5	5	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	11,096.97	23	\$50,783.82	6%	at stock turnover	\$0.15	0	0	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	New	11,901.54	3	\$28,800.00	10%	75%	\$0.54	3	3	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	-2,334.02	15	\$23,400.00	45%	85%	\$4.36	0	0	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	6,364.02	10	\$4,500.00	15%	50%	\$0.08	1	1	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	90,582.47	15	\$3,573.00	15%	25%	\$0.00	3	3	Developed from RTF
College	Heating	Energy Management System	per 30,000 sqft College bldg.	New	10,755.99	15	\$9,525.00	20%	65%	\$0.07	2	2	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	18,034.28	23	\$49,748.49	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	-1,859.82	18	\$93.00	15%	35%	\$0.09	0	0	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	5,749.72	45	\$40,800.00	15%	50%	\$0.61	1	1	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	-2,584.26	20	\$246.00	15%	50%	\$0.01	0	0	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	10,117.47	45	\$31,200.00	15%	50%	\$0.19	1	1	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	8,228.62	20	\$10,500.00	15%	50%	\$0.10	1	1	BEST Simulation

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College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	13,367.08	45	\$23,130.00	15%	50%	\$0.14	2	2	BEST Simulation
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	New	0.00	14	\$100,344.00	6%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	New	8,667.45	3	\$9,525.00	3%	29%	\$0.24	1	1	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$85,893.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	843.62	15	\$9,525.00	20%	65%	\$0.06	6	10	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	432.97	15	-\$29.08	100%	at stock turnover	-\$0.03	0	0	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	552.03	15	\$230.33	100%	at stock turnover	\$0.01	41	39	EIA 2011
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	5,107.16	5	\$19,590.00	5%	15%	\$0.62	3	6	Illinois TRM
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	Existing	8,200.91	5	\$1,047.00	15%	50%	\$0.02	17	31	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	4,627.13	12	\$12,000.00	3%	25%	\$0.24	16	34	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	Existing	700.73	16	\$660.00	1%	3%	\$0.07	0	1	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	5,017.90	10	\$2,730.00	7%	45%	\$0.06	22	44	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft College bldg.	Existing	0.00	8	\$3,006.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	Existing	385.61	5	\$3,300.00	10%	25%	\$1.08	0	1	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	141.82	15	\$25.30	100%	at stock turnover	\$0.03	223	230	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	35.01	15	\$5.22	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	741.60	3	\$18,300.00	10%	75%	\$0.29	8	13	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	159.54	6	\$5.76	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	129.84	15	\$104.88	100%	at stock turnover	\$0.05	30	22	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	673.82	3	\$9,525.00	3%	29%	\$0.20	3	7	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	3,947.43	20	\$120,000.00	10%	30%	\$0.11	2	2	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	New	661.52	3	\$28,800.00	10%	75%	\$0.54	1	2	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	714.99	15	\$9,525.00	20%	65%	\$0.07	1	1	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	432.97	15	-\$29.08	100%	at stock turnover	-\$0.03	0	0	EIA 2011

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College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	552.03	15	\$230.33	100%	at stock turnover	\$0.01	8	7	EIA 2011
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	New	4,604.41	5	\$19,590.00	5%	15%	\$0.68	0	1	Illinois TRM
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	New	7,372.94	5	\$1,047.00	15%	50%	\$0.03	2	3	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	4,121.68	12	\$12,000.00	4%	25%	\$0.27	2	3	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	New	634.75	16	\$660.00	1%	3%	\$0.08	0	0	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	New	4,472.91	10	\$2,730.00	22%	45%	\$0.07	1	2	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft College bldg.	New	0.00	8	\$3,006.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	New	262.69	5	\$3,300.00	10%	25%	\$1.49	0	0	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	141.82	15	\$25.30	100%	at stock turnover	\$0.03	41	42	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	35.01	15	\$5.22	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	159.54	6	\$5.76	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	129.84	15	\$104.88	100%	at stock turnover	\$0.05	6	3	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	600.23	3	\$9,525.00	3%	29%	\$0.24	0	1	BEST Simulation

Measure Data and Assumptions

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College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	369.75	7	\$1,398.00	1%	4%	\$0.14	0	0	Developed from RTF
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	Existing	5.36	7	\$30.00	1%	3%	\$1.06	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	Existing	264.44	10	\$195.00	1%	3%	\$0.11	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	Existing	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	Existing	712.91	15	\$96.00	15%	75%	\$0.02	3	3	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	Existing	746.40	10	\$172.90	36%	at stock turnover	\$0.03	2	2	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	Existing	267.85	10	\$328.51	90%	at stock turnover	\$0.18	2	2	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	Existing	10.37	5	\$60.00	15%	75%	\$1.19	0	0	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	375.75	3	\$9,525.00	3%	29%	\$0.20	3	3	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	369.79	7	\$1,398.00	1%	2%	\$0.14	0	0	Developed from RTF

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College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	New	5.41	7	\$3.00	1%	3%	\$0.11	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	New	712.91	15	\$96.00	15%	75%	\$0.02	0	0	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	New	746.40	10	\$207.49	43%	at stock turnover	\$0.04	0	0	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	New	267.85	10	\$363.80	100%	at stock turnover	\$0.20	0	0	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	New	9.95	5	\$60.00	15%	75%	\$1.20	0	0	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	New	352.15	3	\$9,525.00	3%	29%	\$0.24	1	1	BEST Simulation
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	4,370.19	6	\$32.79	100%	at stock turnover	\$0.00	13	14	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	Existing	601.32	4	\$795.00	10%	50%	\$0.36	14	16	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	Existing	258.12	6	\$6.40	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	Existing	760.14	6	\$51.39	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	Existing	1,835.44	5	\$1,200.00	10%	25%	\$0.15	16	18	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	Existing	222.22	6	\$1.67	100%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,186.45	6	\$15.17	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	Existing	637.83	6	\$4.79	100%	at stock turnover	\$0.00	5	5	Assumed same as Desktop
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	New	4,370.19	6	\$32.79	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	New	571.68	4	\$795.00	10%	50%	\$0.36	2	2	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	New	258.12	6	\$6.40	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	New	760.14	6	\$51.39	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	New	1,779.00	5	\$1,200.00	10%	25%	\$0.16	2	2	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	New	222.22	6	\$1.67	100%	at stock turnover	\$0.00	0	0	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	New	1,186.45	6	\$15.17	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	New	637.83	6	\$4.79	100%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	Existing	542.99	9	\$16.24	27%	at stock turnover	\$0.00	0	0	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	Existing	1,467.65	8	\$2,544.00	0%	25%	\$0.30	1	1	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	Existing	1,039.00	9	\$102.00	0%	25%	\$0.02	0	0	PacifiCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	Existing	179.42	15	\$816.00	0%	25%	\$0.51	0	1	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	Existing	358.33	15	\$4,665.00	0%	25%	\$1.44	1	1	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	Existing	318.85	4	\$5,181.00	0%	25%	\$4.61	0	0	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	Existing	1,252.51	10	\$96.57	27%	at stock turnover	\$0.02	2	2	EIA 2011
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	New	542.99	9	\$22.74	37%	at stock turnover	\$0.01	0	0	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	New	1,467.65	8	\$2,544.00	0%	25%	\$0.30	0	0	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	New	1,039.00	9	\$102.00	0%	25%	\$0.02	0	0	PacificCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	New	176.21	15	\$816.00	0%	25%	\$0.52	0	0	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	New	352.08	15	\$4,665.00	0%	25%	\$1.47	0	0	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	New	319.26	4	\$5,181.00	0%	25%	\$4.62	0	0	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	New	1,252.51	10	\$135.19	37%	at stock turnover	\$0.03	1	1	EIA 2011
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

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College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	Existing	1,661.84	15	\$9,525.00	20%	65%	\$0.06	5	7	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	908.65	18	\$93.00	15%	50%	\$0.01	2	3	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	1,897.86	50	\$75,000.00	15%	25%	\$0.73	1	2	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	0.00	45	\$40,800.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	1,054.01	20	\$10,500.00	15%	50%	\$0.08	2	3	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	-67.97	45	\$23,130.00	15%	35%	\$0.10	0	0	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	Existing	1,927.60	3	\$18,300.00	10%	75%	\$0.29	8	11	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	1,403.60	3	\$9,525.00	3%	29%	\$0.20	2	4	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	Existing	501.10	15	\$6,600.00	15%	75%	\$1.37	2	3	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	Existing	4,787.48	18	\$5,100.00	15%	35%	\$0.11	6	9	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	Existing	25,052.54	20	\$42,218.76	100%	at stock turnover	\$0.18	10	10	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	Existing	14,142.95	15	\$3,831.00	13%	50%	\$0.03	37	47	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$85,893.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	5,887.68	20	\$120,000.00	10%	30%	\$0.11	1	1	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	New	1,203.90	3	\$28,800.00	10%	75%	\$0.54	1	1	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	New	1,076.87	15	\$9,525.00	20%	65%	\$0.07	1	1	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	542.67	18	\$93.00	15%	35%	\$0.09	0	0	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	1,175.16	50	\$75,000.00	15%	25%	\$1.20	0	0	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	0.00	45	\$40,800.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	677.54	20	\$10,500.00	15%	50%	\$0.10	0	0	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	53.62	45	\$23,130.00	15%	50%	\$0.14	0	0	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

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College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	New	876.74	3	\$9,525.00	3%	29%	\$0.24	0	0	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	New	310.28	15	\$3,900.00	15%	75%	\$1.25	0	0	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	New	3,010.10	18	\$5,100.00	15%	35%	\$0.16	1	1	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	New	25,512.21	20	\$42,230.57	100%	at stock turnover	\$0.17	1	1	BEST Simulation
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	New	9,317.49	15	\$3,831.00	19%	50%	\$0.05	3	3	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$85,893.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	5,354.79	5	\$5,400.00	3%	75%	\$0.22	22	23	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	1,396.09	7	\$1,398.00	1%	4%	\$0.14	0	0	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	Existing	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	Existing	5,506.90	5	\$1,200.00	1%	10%	\$0.05	3	3	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	Existing	14,221.22	5	\$993.00	25%	65%	\$0.02	12	12	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	Existing	1,971.79	15	\$66.00	15%	25%	\$0.00	1	1	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	Existing	155.11	15	\$9.00	15%	75%	\$0.01	1	1	DEER
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	Existing	3,443.36	15	\$2,421.00	16%	75%	\$0.08	11	12	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	Existing	10,920.15	20	\$37,500.00	1%	30%	\$0.30	17	19	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	Existing	1,186.50	13	\$109.80	35%	at stock turnover	\$0.01	5	4	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	5,128.05	5	\$5,400.00	3%	75%	\$0.22	20	22	AEG study for PN&L
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	16,177.69	20	\$120,000.00	10%	30%	\$0.11	2	2	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	4,905.79	5	\$5,400.00	6%	75%	\$0.22	2	2	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	1,335.51	7	\$1,398.00	1%	2%	\$0.14	0	0	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	New	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	New	5,568.32	5	\$1,200.00	0%	75%	\$0.05	3	3	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	New	14,185.89	5	\$993.00	25%	65%	\$0.02	2	2	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	New	1,966.55	15	\$66.00	15%	25%	\$0.00	0	0	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	New	155.43	15	\$9.00	15%	75%	\$0.01	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	New	3,356.71	15	\$2,421.00	1%	75%	\$0.08	2	2	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	New	10,489.26	20	\$37,500.00	1%	30%	\$0.30	2	2	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	New	1,186.50	13	\$109.80	35%	at stock turnover	\$0.01	1	1	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	5,100.84	5	\$5,400.00	6%	75%	\$0.22	3	3	AEG study for PN&L
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	732,101.28	23	\$946,854.63	8%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	Existing	415,140.68	23	\$167,833.17	19%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$4,070.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$10,915.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$3,765.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$105,000.00	10%	75%	\$10.00	0	0	E3T Website
Data Center	Cooling	De-stratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	Existing	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$17,860.00	15%	25%	\$10.00	0	0	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	Existing	179,110.17	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	645,609.92	23	\$779,210.42	7%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	0.00	18	\$100.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$30,940.00	18%	75%	\$10.00	0	0	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	0.00	50	\$125,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$68,000.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$410.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$52,000.00	15%	35%	\$10.00	0	0	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	Existing	267,104.75	15	\$140,284.52	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	Existing	573,886.22	23	\$971,477.51	45%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$136,050.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$755.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	Existing	659,234.57	23	\$253,938.89	19%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$4,070.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$4,070.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$10,915.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$50,180.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$310,895.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	594,316.11	23	\$799,068.07	9%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	New	377,148.90	23	\$153,573.66	18%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	0.00	10	\$4,070.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	0.00	15	\$10,915.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$3,765.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	15	\$105,000.00	10%	75%	\$10.00	0	0	E3T Website
Data Center	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	New	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	0.00	15	\$17,860.00	15%	25%	\$10.00	0	0	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	New	179,110.17	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	520,634.19	23	\$657,590.04	8%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	0.00	18	\$95.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	New	0.00	10	\$30,940.00	18%	75%	\$10.00	0	0	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	0.00	50	\$125,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	0.00	45	\$68,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	0.00	45	\$52,000.00	15%	50%	\$10.00	0	0	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	0.00	45	\$38,550.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	New	230,303.30	15	\$133,937.54	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	New	460,237.31	23	\$819,847.77	42%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	New	0.00	15	\$136,050.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$285.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	New	603,736.99	23	\$232,363.63	21%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	0.00	10	\$4,070.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	New	0.00	4	\$4,070.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	0.00	15	\$10,915.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$50,180.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$310,895.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$3,945.00	15%	25%	\$10.00	0	0	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$2,845.00	33%	60%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$4,455.00	15%	30%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	306.79	15	-\$13.54	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	391.16	15	\$107.25	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	201.02	15	\$31.71	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	48.30	15	\$4.73	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	32.72	6	\$0.78	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	26.63	15	\$14.13	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	0.00	5	\$3,945.00	15%	25%	\$10.00	0	0	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	0.00	10	\$2,845.00	44%	60%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	New	0.00	10	\$4,455.00	15%	30%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	306.79	15	-\$13.54	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	391.16	15	\$107.25	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	201.02	15	\$31.71	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	48.30	15	\$4.73	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	32.72	6	\$0.78	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	26.63	15	\$14.13	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	7,426.14	15	\$6.93	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	756.85	10	\$7.36	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,283.09	18	\$31.24	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,362.68	10	\$16.57	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	7,426.14	15	\$7.62	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	756.85	10	\$8.10	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,283.09	18	\$34.37	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,362.68	10	\$18.23	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	2,763.07	23	\$89,501.78	8%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$17,860.00	15%	25%	\$10.00	0	0	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	20,118.73	23	\$49,658.52	7%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	0.00	18	\$100.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$68,000.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$410.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$52,000.00	15%	35%	\$10.00	0	0	BPA
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	Existing	0.00	14	\$230,725.00	3%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$755.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$310,895.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	8,393.45	23	\$79,062.20	9%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	0.00	15	\$17,860.00	15%	25%	\$10.00	0	0	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	18,441.22	23	\$50,871.04	8%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	0.00	18	\$95.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	0.00	45	\$68,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	0.00	45	\$52,000.00	15%	50%	\$10.00	0	0	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	0.00	45	\$38,550.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	New	0.00	14	\$230,725.00	6%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$285.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$310,895.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	622.61	15	-\$27.48	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	793.81	15	\$217.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$52,150.00	5%	15%	\$10.00	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$3,265.00	15%	50%	\$10.00	0	0	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	12	\$20,000.00	3%	25%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	16	\$2,060.00	1%	3%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$8,520.00	7%	45%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	Existing	0.00	25	\$61,500.00	15%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$5,500.00	10%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	286.34	15	\$45.17	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	68.79	15	\$6.74	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	227.40	6	\$5.40	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	185.08	15	\$98.23	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	622.61	15	-\$27.48	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	793.81	15	\$217.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	0.00	5	\$52,150.00	5%	15%	\$10.00	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	New	0.00	5	\$3,265.00	15%	50%	\$10.00	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	0.00	12	\$20,000.00	4%	25%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	New	0.00	16	\$2,060.00	1%	3%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	10	\$8,520.00	22%	45%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	New	0.00	25	\$61,500.00	18%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Data Center bldg.	New	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	New	0.00	5	\$5,500.00	10%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	286.34	15	\$45.17	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	68.79	15	\$6.74	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	227.40	6	\$5.40	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	185.08	15	\$98.23	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	0.00	7	\$6,985.00	1%	4%	\$10.00	0	0	Developed from RTF
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	Existing	0.00	7	\$155.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$975.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$18,860.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	Existing	693.81	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	Existing	124.49	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	0.00	7	\$6,985.00	1%	2%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	New	0.00	7	\$10.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	New	0.00	15	\$18,860.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	New	693.81	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	New	124.49	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	New	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$500,000.00	10%	50%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$52,500.00	10%	15%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	76,153.53	6	\$571.40	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$1,325.00	10%	50%	\$10.00	0	0	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	5,997.17	6	\$148.65	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	13,245.94	6	\$895.59	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$2,000.00	10%	25%	\$10.00	0	0	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	3,097.85	6	\$9.30	40%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	16,539.73	6	\$211.47	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,111,461.32	6	\$8,339.66	100%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	New	0.00	20	\$150,000.00	10%	50%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	New	0.00	3	\$52,500.00	10%	15%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	76,153.53	6	\$571.40	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	New	0.00	4	\$1,325.00	10%	50%	\$10.00	0	0	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	5,997.17	6	\$148.65	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	13,245.94	6	\$895.59	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,000.00	10%	25%	\$10.00	0	0	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	3,097.85	6	\$10.23	44%	at stock turnover	\$0.00	0	0	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	16,539.73	6	\$211.47	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,111,461.32	6	\$8,339.66	100%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$13,155.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	Existing	288.19	9	\$1.65	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	Existing	0.00	9	\$515.00	0%	10%	\$10.00	0	0	PacifiCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$4,075.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$23,325.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$18,755.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	Existing	664.76	10	\$9.83	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	New	0.00	5	\$7,735.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	New	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	New	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	New	288.19	9	\$1.82	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	New	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	New	0.00	9	\$515.00	0%	10%	\$10.00	0	0	PacificCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	New	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	New	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	New	0.00	15	\$4,075.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	New	0.00	15	\$23,325.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	New	0.00	4	\$18,755.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	New	664.76	10	\$10.81	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	0.00	18	\$100.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	0.00	50	\$125,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$68,000.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$410.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$755.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$11,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	Existing	0.00	18	\$8,500.00	15%	35%	\$10.00	0	0	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	Existing	720,686.40	20	\$768,806.43	100%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$8,810.00	13%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$310,895.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	0.00	18	\$95.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	0.00	50	\$125,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	0.00	45	\$68,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	0.00	45	\$38,550.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$285.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	New	0.00	15	\$6,500.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	New	0.00	18	\$8,500.00	15%	35%	\$10.00	0	0	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	New	671,354.27	20	\$756,408.84	100%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	New	0.00	15	\$8,810.00	19%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$310,895.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$9,000.00	3%	75%	\$10.00	0	0	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	0.00	7	\$6,985.00	1%	4%	\$10.00	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$5,585.00	1%	7%	\$10.00	0	0	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$2,000.00	1%	10%	\$10.00	0	0	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$550.00	25%	65%	\$10.00	0	0	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$505.00	15%	75%	\$10.00	0	0	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15.00	15%	75%	\$10.00	0	0	DEER
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$6,985.00	16%	75%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$62,500.00	1%	30%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	Existing	651.37	13	\$37.08	68%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$9,000.00	3%	75%	\$10.00	0	0	AEG study for PN&L
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	0.00	5	\$9,000.00	6%	75%	\$10.00	0	0	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	0.00	7	\$6,985.00	1%	2%	\$10.00	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	New	0.00	20	\$5,585.00	1%	8%	\$10.00	0	0	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,000.00	0%	75%	\$10.00	0	0	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	New	0.00	5	\$550.00	25%	65%	\$10.00	0	0	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	New	0.00	15	\$505.00	15%	75%	\$10.00	0	0	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	New	0.00	15	\$6,985.00	1%	75%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	New	0.00	20	\$62,500.00	1%	30%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	New	651.37	13	\$37.08	68%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	0.00	5	\$9,000.00	6%	75%	\$10.00	0	0	AEG study for PN&L
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	31,332.37	23	\$295,085.93	4%	at stock turnover	\$0.02	8	8	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	Existing	14,281.53	23	\$4,637.54	6%	at stock turnover	\$0.03	14	14	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	9,624.98	10	\$814.00	15%	75%	\$0.01	9	10	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	1,012.98	15	\$2,184.00	15%	75%	\$0.20	1	1	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	Existing	441.40	15	\$1,692.00	15%	75%	\$0.34	0	0	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	12,827.20	15	\$15,600.00	45%	85%	\$0.20	93	107	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	De-stratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	Existing	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	2,121.48	10	\$3,000.00	15%	35%	\$0.10	9	10	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	3,642.25	15	\$6,350.00	20%	65%	\$0.06	36	39	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	Existing	6,575.35	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	9,944.64	23	\$141,995.52	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	78.44	18	\$44.00	15%	25%	\$0.01	0	0	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	Existing	14,101.03	10	\$13,904.00	18%	75%	\$0.14	79	92	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	7,314.19	15	\$260.00	15%	75%	\$1.08	48	55	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	3,633.33	50	\$50,000.00	15%	25%	\$0.66	7	10	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	12,908.91	45	\$27,200.00	15%	35%	\$0.18	54	61	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	3,091.13	45	\$20,800.00	15%	35%	\$0.24	12	15	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	2,257.06	20	\$7,000.00	15%	50%	\$0.11	17	19	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	-1,154.32	45	\$15,420.00	15%	35%	\$0.22	-5	-5	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	Existing	9,805.74	15	\$5,150.01	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	3,693.91	3	\$12,200.00	10%	75%	\$0.32	48	57	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	Existing	8,848.27	23	\$58,223.99	82%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$61,138.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	2,695.28	3	\$6,350.00	4%	27%	\$0.19	12	18	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	Existing	23,290.71	23	\$7,016.80	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$2,184.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$10,036.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$42,178.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	11,614.56	20	\$80,000.00	10%	15%	\$0.12	4	4	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	22,081.05	23	\$244,498.73	4%	at stock turnover	\$0.02	3	3	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	New	11,675.86	23	\$4,075.30	7%	at stock turnover	\$0.04	7	7	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	7,482.68	10	\$814.00	15%	75%	\$0.01	2	2	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	963.63	15	\$2,184.00	15%	75%	\$0.22	0	0	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$1,692.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	New	2,179.02	3	\$19,200.00	10%	75%	\$0.62	11	11	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	4,421.43	15	\$15,600.00	45%	85%	\$0.51	12	12	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	New	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	Destratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	New	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	1,238.49	10	\$3,000.00	15%	50%	\$0.13	3	3	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	New	2,103.23	15	\$6,350.00	20%	65%	\$0.07	7	7	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	New	6,575.35	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	4,505.16	23	\$117,652.93	0%	at stock turnover	\$0.00	0	0	BEST Simulation

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Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	-55.82	18	\$70.00	15%	25%	\$0.03	0	0	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	New	8,162.18	10	\$13,904.00	18%	75%	\$0.24	6	6	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	2,127.01	50	\$50,000.00	15%	25%	\$1.06	2	2	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	1,162.50	45	\$27,200.00	15%	50%	\$1.50	3	3	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	1,883.50	45	\$20,800.00	15%	50%	\$0.31	5	5	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	1,312.51	20	\$7,000.00	15%	50%	\$0.14	3	3	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	-142.42	45	\$15,420.00	15%	50%	\$0.28	0	0	BEST Simulation
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	New	8,454.71	15	\$4,917.01	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	New	5,828.85	23	\$48,242.53	86%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	New	0.00	15	\$61,138.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,762.69	3	\$6,350.00	4%	27%	\$0.24	4	4	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$58.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	New	19,196.65	23	\$6,166.11	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	0.00	15	\$2,184.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$10,036.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$42,178.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	245.07	15	\$6,350.00	20%	65%	\$0.06	6	9	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	662.15	5	\$3,928.00	15%	25%	\$1.00	3	6	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	312.79	10	\$3,458.00	33%	60%	\$1.13	4	8	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	Existing	3,886.65	10	\$5,414.00	15%	30%	\$0.16	30	55	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	308.52	15	-\$7.33	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	393.36	15	\$58.08	100%	at stock turnover	\$0.01	153	142	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	80.70	15	\$39.83	100%	at stock turnover	\$0.03	69	67	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	17.51	15	\$0.92	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	223.49	3	\$12,200.00	10%	75%	\$0.32	7	11	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	51.26	6	\$0.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	41.72	15	\$11.92	100%	at stock turnover	\$0.02	26	19	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	195.08	3	\$6,350.00	4%	27%	\$0.19	2	5	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	1,157.09	20	\$80,000.00	10%	15%	\$0.12	1	1	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	189.36	3	\$19,200.00	10%	75%	\$0.62	2	3	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	209.47	15	\$6,350.00	20%	65%	\$0.07	1	2	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	557.00	5	\$3,928.00	15%	25%	\$1.08	1	1	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	164.82	10	\$3,458.00	44%	60%	\$1.94	0	1	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	New	3,292.01	10	\$5,414.00	15%	30%	\$0.17	7	11	AEG research & analysis
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	308.52	15	-\$7.33	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	393.36	15	\$58.08	100%	at stock turnover	\$0.01	60	55	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	80.70	15	\$39.83	100%	at stock turnover	\$0.03	27	27	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	17.51	15	\$0.92	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	51.26	6	\$0.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	41.72	15	\$11.92	100%	at stock turnover	\$0.02	11	6	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	165.28	3	\$6,350.00	4%	27%	\$0.24	1	1	BEST Simulation
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	17,343.58	15	\$243.59	55%	at stock turnover	\$0.00	59	58	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	1,767.60	10	\$287.65	61%	at stock turnover	\$0.02	23	20	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	2,996.62	18	\$1,098.00	55%	at stock turnover	\$0.04	8	8	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	3,182.50	10	\$577.38	54%	at stock turnover	\$0.03	25	22	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	17,343.58	15	\$341.02	77%	at stock turnover	\$0.00	37	36	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	1,767.60	10	\$402.71	85%	at stock turnover	\$0.03	12	11	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	2,996.62	18	\$1,537.20	77%	at stock turnover	\$0.06	4	4	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	3,182.50	10	\$808.34	76%	at stock turnover	\$0.04	13	12	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	2,654.14	23	\$5,970.50	4%	at stock turnover	\$0.02	1	1	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	-5,438.12	15	\$15,600.00	45%	85%	\$0.20	-9	-9	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	2,315.38	10	\$3,000.00	15%	35%	\$0.10	2	2	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	31,482.76	15	\$3,572.00	15%	25%	\$0.01	2	2	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	3,830.38	15	\$6,350.00	20%	65%	\$0.06	8	9	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	6,460.77	23	\$5,464.78	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	16.61	18	\$44.00	15%	25%	\$0.01	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	-6,800.88	15	\$260.00	15%	75%	\$1.11	-10	-10	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	-1,116.46	45	\$27,200.00	15%	35%	\$0.18	-1	-1	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	3,807.53	45	\$20,800.00	15%	35%	\$0.24	4	4	BPA
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	3,001.96	20	\$7,000.00	15%	50%	\$0.11	5	5	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	7,598.26	45	\$15,420.00	15%	35%	\$0.22	7	8	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	4,548.74	3	\$12,200.00	10%	75%	\$0.32	14	15	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	Existing	0.00	14	\$94,242.00	3%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	3,353.61	3	\$6,350.00	4%	27%	\$0.19	4	4	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$42,178.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	20,758.06	20	\$80,000.00	10%	15%	\$0.12	1	1	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	2,237.56	23	\$5,100.79	4%	at stock turnover	\$0.02	0	0	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	New	4,236.31	3	\$19,200.00	10%	75%	\$0.62	4	4	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	-1,300.72	15	\$15,600.00	45%	85%	\$0.51	-1	-1	BEST Simulation
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	2,213.46	10	\$3,000.00	15%	50%	\$0.13	1	1	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	31,483.20	15	\$3,572.00	15%	25%	\$0.01	1	1	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	New	3,759.01	15	\$6,350.00	20%	65%	\$0.07	2	2	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	4,983.18	23	\$4,527.93	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	32.24	18	\$70.00	15%	25%	\$0.03	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	174.47	45	\$27,200.00	15%	50%	\$1.50	0	0	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	3,554.55	45	\$20,800.00	15%	50%	\$0.31	2	2	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	2,858.87	20	\$7,000.00	15%	50%	\$0.14	1	1	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	4,696.31	45	\$15,420.00	15%	50%	\$0.28	2	2	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	New	0.00	14	\$94,242.00	6%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	3,147.36	3	\$6,350.00	4%	27%	\$0.24	1	1	BEST Simulation
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$58.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$42,178.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,947.60	15	\$6,350.00	20%	65%	\$0.06	42	68	BEST Simulation
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,040.51	15	-\$24.73	100%	at stock turnover	-\$0.01	2	3	EIA 2011
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,326.64	15	\$195.87	100%	at stock turnover	\$0.01	456	425	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	10,530.44	5	\$22,118.00	5%	15%	\$0.33	16	35	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	Existing	16,860.36	5	\$1,550.00	15%	50%	\$0.02	99	185	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	11,587.11	12	\$8,000.00	3%	25%	\$0.06	118	247	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	Existing	1,753.99	16	\$976.00	1%	3%	\$0.04	2	4	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	12,556.74	10	\$4,042.00	7%	45%	\$0.03	163	318	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	Existing	0.00	25	\$24,600.00	15%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 20,000 sqft Grocery bldg.	Existing	0.00	8	\$4,496.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	Existing	1,418.14	5	\$2,200.00	10%	25%	\$0.20	3	8	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	302.61	15	\$149.35	100%	at stock turnover	\$0.03	1,460	1,418	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	65.67	15	\$3.46	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,841.14	3	\$12,200.00	10%	75%	\$0.32	55	93	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	261.15	6	\$3.34	100%	at stock turnover	\$0.00	0	2	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	212.55	15	\$60.75	100%	at stock turnover	\$0.02	391	283	EIA 2011
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,606.96	3	\$6,350.00	4%	27%	\$0.19	17	44	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	8,948.64	20	\$80,000.00	10%	15%	\$0.12	7	8	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	1,568.24	3	\$19,200.00	10%	75%	\$0.62	15	22	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,619.72	15	\$6,350.00	20%	65%	\$0.07	11	16	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,040.51	15	-\$24.73	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,326.64	15	\$195.87	100%	at stock turnover	\$0.01	178	165	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	9,041.90	5	\$22,118.00	5%	15%	\$0.36	4	6	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	New	13,982.43	5	\$1,550.00	15%	50%	\$0.02	25	35	Illinois TRM
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	10,089.81	12	\$8,000.00	4%	25%	\$0.07	31	44	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	New	1,514.29	16	\$976.00	1%	3%	\$0.05	0	1	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	10,522.38	10	\$4,042.00	22%	45%	\$0.04	16	24	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	New	0.00	25	\$24,600.00	18%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 20,000 sqft Grocery bldg.	New	0.00	8	\$4,496.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	New	1,198.34	5	\$2,200.00	10%	25%	\$0.22	1	1	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	302.61	15	\$149.35	100%	at stock turnover	\$0.03	578	562	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	65.67	15	\$3.46	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	261.15	6	\$3.34	100%	at stock turnover	\$0.00	0	1	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	212.55	15	\$60.75	100%	at stock turnover	\$0.02	165	97	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,376.61	3	\$6,350.00	4%	27%	\$0.24	6	9	BEST Simulation
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	70.45	7	\$1,398.00	1%	4%	\$0.79	0	0	Developed from RTF
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	Existing	1.03	7	\$30.00	1%	3%	\$5.54	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	Existing	50.38	10	\$194.00	1%	3%	\$0.57	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	Existing	0.00	13	\$0.00	35%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	Existing	1,531.49	15	\$10,756.00	15%	75%	\$0.83	8	8	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	Existing	277.52	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	Existing	49.80	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,184.66	3	\$6,350.00	4%	27%	\$0.19	11	11	BEST Simulation
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	40.26	7	\$1,398.00	1%	2%	\$1.38	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	New	0.59	7	\$2.00	1%	3%	\$0.65	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	New	0.00	13	\$0.00	42%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	New	1,531.49	15	\$10,756.00	15%	75%	\$0.83	3	3	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	New	277.52	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	New	49.80	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,151.39	3	\$6,350.00	4%	27%	\$0.24	4	4	BEST Simulation
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	745.00	6	\$5.59	100%	at stock turnover	\$0.00	7	7	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	Existing	16.23	4	\$530.00	10%	50%	\$8.99	1	1	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	146.67	6	\$2.33	64%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	129.58	6	\$8.76	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	47.69	5	\$800.00	10%	25%	\$3.87	1	1	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	378.83	6	\$2.84	100%	at stock turnover	\$0.00	6	6	Assumed same as Desktop
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	161.81	6	\$2.07	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	543.67	6	\$4.08	100%	at stock turnover	\$0.00	13	13	Assumed same as Desktop
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	New	0.00	20	\$60,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	745.00	6	\$5.59	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	New	15.52	4	\$926.00	10%	50%	\$16.26	0	0	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	146.67	6	\$2.56	70%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	129.58	6	\$8.76	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	26.04	5	\$800.00	10%	25%	\$7.02	0	0	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	378.83	6	\$2.84	100%	at stock turnover	\$0.00	2	2	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	161.81	6	\$2.07	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	543.67	6	\$4.08	100%	at stock turnover	\$0.00	4	4	Assumed same as Desktop
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	Existing	47,632.68	5	\$2,632.00	10%	75%	\$0.26	1,513	1,542	Developed from RTF
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	Existing	277.49	8	\$196.00	10%	75%	\$0.11	9	9	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	Existing	8,257.70	5	\$2,532.00	10%	75%	\$0.07	132	133	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	Existing	939.83	9	\$104.54	99%	at stock turnover	\$0.02	24	22	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	Existing	7,147.55	8	\$2,542.00	25%	75%	\$0.06	86	90	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	Existing	1,039.00	9	\$104.00	0%	75%	\$0.02	17	17	PacifiCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$2,306.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	16	\$162.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	Existing	5,270.45	15	\$816.00	14%	75%	\$0.02	407	405	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	Existing	10,372.08	15	\$4,666.00	25%	75%	\$0.05	652	658	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	Existing	7,461.36	4	\$2,544.00	25%	75%	\$0.09	15	16	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	Existing	4,335.77	10	\$1,242.86	99%	at stock turnover	\$0.08	76	67	EIA 2011
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	New	48,402.19	5	\$1,548.00	10%	75%	\$0.26	434	434	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	New	162.00	8	\$196.00	10%	75%	\$0.20	1	1	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	New	8,471.52	5	\$2,532.00	10%	75%	\$0.07	38	38	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	New	939.83	9	\$105.70	100%	at stock turnover	\$0.02	9	8	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	New	4,118.16	8	\$2,542.00	35%	75%	\$0.10	11	11	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	New	1,039.00	9	\$104.00	0%	75%	\$0.02	5	5	PacificCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	New	0.00	4	\$2,306.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	New	0.00	16	\$162.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	New	5,305.81	15	\$816.00	0%	75%	\$0.02	141	141	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	New	10,402.81	15	\$4,666.00	35%	75%	\$0.05	147	147	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	New	7,505.23	4	\$2,544.00	35%	75%	\$0.09	3	3	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	New	4,335.77	10	\$1,256.68	100%	at stock turnover	\$0.08	36	33	EIA 2011
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$15,600.00	45%	85%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$3,000.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,548.87	15	\$6,350.00	20%	65%	\$0.06	16	18	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	327.62	18	\$44.00	15%	25%	\$0.01	1	1	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	-503.91	15	\$260.00	15%	75%	\$1.05	-3	-4	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	1,771.30	50	\$50,000.00	15%	25%	\$0.66	4	5	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	0.00	45	\$27,200.00	15%	35%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	972.65	20	\$7,000.00	15%	50%	\$0.11	8	9	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	-62.93	45	\$15,420.00	15%	35%	\$0.22	0	0	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,800.94	3	\$12,200.00	10%	75%	\$0.32	26	30	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,309.89	3	\$6,350.00	4%	27%	\$0.19	7	9	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	Existing	467.61	15	\$4,400.00	15%	75%	\$1.00	6	7	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	Existing	4,493.44	18	\$3,400.00	15%	35%	\$0.08	20	23	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	Existing	8,653.93	20	\$16,361.39	100%	at stock turnover	\$0.20	33	34	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	Existing	9,803.67	15	\$3,598.00	13%	50%	\$0.04	86	93	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$42,178.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	6,435.99	20	\$80,000.00	10%	15%	\$0.12	2	2	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	New	1,351.49	3	\$19,200.00	10%	75%	\$0.62	6	6	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	0.00	15	\$15,600.00	45%	85%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	0.00	10	\$3,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,186.72	15	\$6,350.00	20%	65%	\$0.07	4	4	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	252.52	18	\$70.00	15%	25%	\$0.03	0	0	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	1,311.45	50	\$50,000.00	15%	25%	\$1.06	1	1	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	0.00	45	\$27,200.00	15%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	732.05	20	\$7,000.00	15%	50%	\$0.14	2	2	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	58.59	45	\$15,420.00	15%	50%	\$0.28	0	0	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	983.75	3	\$6,350.00	4%	27%	\$0.24	2	2	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$58.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	New	349.58	15	\$2,600.00	15%	75%	\$0.77	1	2	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	New	3,417.25	18	\$3,400.00	15%	35%	\$0.10	5	5	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	New	6,988.33	20	\$14,859.53	100%	at stock turnover	\$0.22	7	7	BEST Simulation
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	New	6,984.81	15	\$3,598.00	19%	50%	\$0.06	15	15	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$42,178.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	3,121.24	5	\$3,600.00	3%	75%	\$0.26	37	39	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	213.86	7	\$1,398.00	1%	4%	\$0.79	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	3,208.53	5	\$800.00	1%	10%	\$0.06	5	5	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	Existing	8,285.98	5	\$1,876.00	25%	65%	\$0.06	21	21	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$958.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	Existing	17.92	15	\$6.00	15%	75%	\$0.04	0	0	DEER
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	2,007.07	15	\$1,976.00	16%	75%	\$0.11	20	20	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	Existing	6,362.67	20	\$25,000.00	1%	30%	\$0.34	30	33	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	Existing	688.23	13	\$35.87	63%	at stock turnover	\$0.01	8	8	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	2,989.01	5	\$3,600.00	3%	75%	\$0.26	35	38	AEG study for PN&L
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	9,424.33	20	\$80,000.00	10%	15%	\$0.12	2	2	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	3,014.90	5	\$3,600.00	6%	75%	\$0.26	10	10	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	119.80	7	\$1,398.00	1%	2%	\$1.38	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	New	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	New	3,244.18	5	\$800.00	0%	75%	\$0.06	11	11	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	New	8,264.97	5	\$1,876.00	25%	65%	\$0.06	6	6	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$958.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	New	9.31	15	\$6.00	15%	75%	\$0.07	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	New	1,955.41	15	\$1,976.00	1%	75%	\$0.11	7	7	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	New	6,197.28	20	\$25,000.00	1%	30%	\$0.34	8	8	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	New	688.31	13	\$34.97	63%	at stock turnover	\$0.01	3	3	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	2,899.50	5	\$3,600.00	6%	75%	\$0.26	9	9	AEG study for PN&L
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	67,544.95	23	\$87,766.78	1%	at stock turnover	\$0.04	3	3	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	Existing	39,399.13	23	\$23,744.54	17%	at stock turnover	\$0.06	28	29	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	28,208.37	10	\$813.00	15%	75%	\$0.00	33	37	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	8,390.53	15	\$1,329.00	15%	75%	\$0.02	10	11	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	Existing	1,036.11	15	\$2,409.00	15%	75%	\$0.21	1	1	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	8,395.30	15	\$11,700.00	45%	85%	\$0.23	28	35	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	Destratification Fans (HVLS)	per 30,000 sqft Health bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	5,167.36	10	\$4,500.00	15%	35%	\$0.04	11	12	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	42,344.66	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	Existing	8,694.03	15	\$9,525.00	20%	65%	\$0.03	40	47	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	Existing	16,476.80	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	59,436.05	23	\$72,113.75	1%	at stock turnover	\$0.04	3	3	BEST Simulation
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	2,534.23	18	\$63,798.00	15%	50%	\$4.74	8	12	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	Existing	34,357.22	10	\$19,779.00	18%	75%	\$0.07	93	122	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	9,193.54	50	\$75,000.00	15%	25%	\$0.32	9	13	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	3,517.82	45	\$40,800.00	15%	35%	\$0.22	7	8	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	11,719.76	20	\$246.00	15%	35%	\$0.01	25	28	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	7,895.75	45	\$31,200.00	15%	35%	\$0.10	16	19	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	5,498.07	20	\$10,500.00	15%	50%	\$0.05	20	23	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	-3,198.05	45	\$23,130.00	15%	35%	\$0.06	-6	-8	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	Existing	24,571.64	15	\$12,905.13	0%	at stock turnover	\$0.06	1	1	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	9,436.20	3	\$18,300.00	10%	75%	\$0.16	60	74	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	Existing	52,793.89	23	\$90,050.68	11%	at stock turnover	\$0.18	10	10	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	Existing	0.00	15	\$86,973.00	15%	75%	\$10.00	0	0	DEER
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	6,894.60	3	\$9,525.00	4%	28%	\$0.09	16	26	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	Existing	74,016.53	23	\$35,926.52	69%	at stock turnover	\$0.05	26	26	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	19,719.66	10	\$813.00	15%	75%	\$0.01	86	107	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	Existing	25,538.37	4	\$813.00	15%	75%	\$0.01	110	140	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	12,293.26	15	\$1,329.00	15%	75%	\$0.01	52	68	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	Existing	1,091.37	15	\$6,108.00	15%	75%	\$0.48	4	6	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$19,878.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	34,111.75	20	\$120,000.00	10%	25%	\$0.06	24	25	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	71,129.04	23	\$69,810.20	1%	at stock turnover	\$0.04	3	2	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	New	30,000.96	23	\$15,770.06	17%	at stock turnover	\$0.05	17	18	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	17,342.18	10	\$813.00	15%	75%	\$0.01	9	9	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	6,113.91	15	\$1,329.00	15%	75%	\$0.02	3	3	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$2,409.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	New	7,069.78	3	\$28,800.00	10%	75%	\$0.29	21	23	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	Destratification Fans (HVLS)	per 30,000 sqft Health bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	3,703.62	10	\$4,500.00	15%	50%	\$0.05	6	6	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	33,553.76	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	New	6,258.58	15	\$9,525.00	20%	65%	\$0.04	13	14	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	New	16,476.80	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	62,659.46	23	\$57,359.69	1%	at stock turnover	\$0.03	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	2,040.82	18	\$27.00	15%	35%	\$0.00	2	2	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	New	22,920.63	10	\$19,778,799.00	18%	75%	\$89.88	10	11	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	6,902.27	50	\$75,000.00	15%	25%	\$0.47	3	3	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	658.59	45	\$40,800.00	15%	50%	\$0.29	1	1	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	6,011.77	45	\$31,200.00	15%	50%	\$0.11	10	10	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	3,925.26	20	\$10,500.00	15%	50%	\$0.05	6	7	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	-454.58	45	\$23,130.00	15%	50%	\$0.10	-1	-1	BEST Simulation
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	New	21,186.18	15	\$12,321.25	0%	at stock turnover	\$0.07	1	0	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	New	55,778.05	23	\$71,626.82	11%	at stock turnover	\$0.13	9	9	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	New	0.00	15	\$56,802.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	New	5,150.77	3	\$9,525.00	4%	28%	\$0.12	8	8	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	New	57,173.46	23	\$23,860.78	69%	at stock turnover	\$0.04	236	235	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	13,697.24	10	\$813.00	15%	75%	\$0.01	27	28	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	New	17,752.24	4	\$813.00	15%	75%	\$0.01	34	37	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	8,748.24	15	\$1,329.00	15%	75%	\$0.01	17	18	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$6,108.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$19,878.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	126.33	15	\$9,525.00	20%	65%	\$0.03	1	2	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	341.41	5	\$2,142.00	15%	25%	\$1.06	1	2	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	20.56	10	\$1,305.00	33%	60%	\$6.49	0	0	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	Existing	1,987.13	10	\$2,043.00	15%	30%	\$0.12	7	13	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	404.02	15	-\$12.48	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	515.12	15	\$98.87	100%	at stock turnover	\$0.01	40	37	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	75.26	15	\$15.21	100%	at stock turnover	\$0.03	15	14	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	17.16	15	\$1.18	100%	at stock turnover	\$0.01	0	0	EIA 2011
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	115.22	3	\$18,300.00	10%	75%	\$0.15	2	3	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	67.54	6	\$1.12	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	54.97	15	\$20.42	100%	at stock turnover	\$0.02	3	2	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	108.45	3	\$9,525.00	4%	28%	\$0.09	1	1	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	580.18	20	\$120,000.00	10%	25%	\$0.06	1	1	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	94.10	3	\$28,800.00	10%	75%	\$0.29	1	1	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	105.03	15	\$9,525.00	20%	65%	\$0.04	0	1	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	276.80	5	\$2,142.00	15%	25%	\$1.19	0	0	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	24.80	10	\$1,305.00	44%	60%	\$4.88	0	0	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	New	1,623.17	10	\$2,043.00	15%	30%	\$0.13	2	3	AEG research & analysis
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	404.02	15	-\$12.48	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	515.12	15	\$98.87	100%	at stock turnover	\$0.01	21	20	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	75.26	15	\$15.21	100%	at stock turnover	\$0.03	8	8	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	17.16	15	\$1.18	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	67.54	6	\$1.12	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	54.97	15	\$20.42	100%	at stock turnover	\$0.02	2	1	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	88.58	3	\$9,525.00	4%	28%	\$0.12	0	0	BEST Simulation
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	41,961.30	15	\$574.30	53%	at stock turnover	\$0.00	65	64	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	4,276.55	10	\$920.70	81%	at stock turnover	\$0.03	35	30	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	7,250.06	18	\$2,588.73	53%	at stock turnover	\$0.04	9	9	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	7,699.79	10	\$1,789.82	70%	at stock turnover	\$0.03	37	32	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	New	41,961.30	15	\$804.02	75%	at stock turnover	\$0.00	56	54	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	New	4,276.55	10	\$1,140.89	100%	at stock turnover	\$0.04	22	20	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	New	7,250.06	18	\$3,624.23	75%	at stock turnover	\$0.05	6	6	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	New	7,699.79	10	\$2,505.75	98%	at stock turnover	\$0.05	26	24	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	20,073.10	23	\$33,403.30	1%	at stock turnover	\$0.04	1	1	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	-4,188.12	15	\$11,700.00	45%	85%	\$0.23	-1	-1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	10,708.84	10	\$4,500.00	15%	35%	\$0.04	1	1	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	153,669.61	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	Existing	18,028.35	15	\$9,525.00	20%	65%	\$0.03	5	5	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	25,135.13	23	\$32,215.73	1%	at stock turnover	\$0.04	1	1	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	-4,995.86	18	\$63,798.00	15%	50%	\$4.86	-1	-1	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	10,896.92	45	\$40,800.00	15%	35%	\$0.23	1	1	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	-8,195.96	20	\$246.00	15%	35%	\$0.01	-1	-1	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	17,391.52	45	\$31,200.00	15%	35%	\$0.10	2	2	BPA
Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	13,884.48	20	\$10,500.00	15%	50%	\$0.05	3	3	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	34,996.90	45	\$23,130.00	15%	35%	\$0.06	5	5	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	20,777.89	3	\$18,300.00	10%	75%	\$0.16	9	9	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	Existing	0.00	14	\$73,227.00	3%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	15,188.26	3	\$9,525.00	4%	28%	\$0.09	2	3	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$19,878.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	88,640.08	20	\$120,000.00	10%	25%	\$0.06	3	3	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	8,930.23	23	\$27,395.47	1%	at stock turnover	\$0.04	0	0	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	New	17,976.04	3	\$28,800.00	10%	75%	\$0.29	3	3	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	9,640.18	10	\$4,500.00	15%	50%	\$0.05	1	1	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	152,819.85	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	New	16,293.23	15	\$9,525.00	20%	65%	\$0.04	2	2	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	21,276.42	23	\$25,624.62	1%	at stock turnover	\$0.03	1	1	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	14,678.17	18	\$27.00	15%	35%	\$0.00	1	1	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	10,254.55	45	\$40,800.00	15%	50%	\$0.29	1	1	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	15,383.32	45	\$31,200.00	15%	50%	\$0.11	1	1	BPA

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Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	12,451.08	20	\$10,500.00	15%	50%	\$0.05	1	1	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	20,324.49	45	\$23,130.00	15%	50%	\$0.10	2	2	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	New	0.00	14	\$73,227.00	6%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	New	13,178.50	3	\$9,525.00	4%	28%	\$0.12	1	1	BEST Simulation
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$19,878.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	2,288.65	15	\$9,525.00	20%	65%	\$0.03	23	38	BEST Simulation
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	570.81	15	-\$17.63	100%	at stock turnover	-\$0.01	0	1	EIA 2011
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	727.77	15	\$139.69	100%	at stock turnover	\$0.01	97	91	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	12,581.57	5	\$41,922.00	5%	15%	\$0.52	9	19	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	Existing	20,169.44	5	\$2,823.00	15%	50%	\$0.03	56	103	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	12,680.07	12	\$12,000.00	3%	25%	\$0.08	60	128	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	Existing	1,903.24	16	\$1,779.00	1%	3%	\$0.07	1	2	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	13,615.02	10	\$7,359.00	7%	45%	\$0.06	80	164	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	Existing	0.00	25	\$18,450.00	15%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft Health bldg.	Existing	0.00	8	\$8,100.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	Existing	2,521.49	5	\$3,300.00	10%	25%	\$0.17	2	7	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	215.20	15	\$43.48	100%	at stock turnover	\$0.03	825	797	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	49.07	15	\$3.36	100%	at stock turnover	\$0.01	0	1	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	2,016.88	3	\$18,300.00	10%	75%	\$0.15	28	48	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	207.25	6	\$3.44	100%	at stock turnover	\$0.00	0	1	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	168.68	15	\$62.67	100%	at stock turnover	\$0.02	306	222	EIA 2011
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	1,760.91	3	\$9,525.00	4%	28%	\$0.09	9	24	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	10,705.36	20	\$120,000.00	10%	25%	\$0.06	15	19	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	1,727.33	3	\$28,800.00	10%	75%	\$0.29	10	15	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	1,937.82	15	\$9,525.00	20%	65%	\$0.04	8	12	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	570.81	15	-\$17.63	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	727.77	15	\$139.69	100%	at stock turnover	\$0.01	52	48	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	10,863.60	5	\$41,922.00	5%	15%	\$0.56	3	5	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	New	17,285.48	5	\$2,823.00	15%	50%	\$0.03	19	28	Illinois TRM
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	10,864.81	12	\$12,000.00	4%	25%	\$0.09	20	30	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	New	1,630.60	16	\$1,779.00	1%	3%	\$0.08	0	0	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	New	11,328.80	10	\$7,359.00	22%	45%	\$0.06	11	16	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	New	0.00	25	\$18,450.00	18%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft Health bldg.	New	0.00	8	\$8,100.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	New	2,001.52	5	\$3,300.00	10%	25%	\$0.20	1	1	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	215.20	15	\$43.48	100%	at stock turnover	\$0.03	446	431	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	49.07	15	\$3.36	100%	at stock turnover	\$0.01	0	0	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	207.25	6	\$3.44	100%	at stock turnover	\$0.00	0	1	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	168.68	15	\$62.67	100%	at stock turnover	\$0.02	166	96	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	1,510.64	3	\$9,525.00	4%	28%	\$0.12	4	6	BEST Simulation
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	310.83	7	\$1,398.00	1%	4%	\$0.17	0	0	Developed from RTF
Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	Existing	4.55	7	\$30.00	1%	3%	\$1.26	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	Existing	222.28	10	\$195.00	1%	3%	\$0.13	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	Existing	0.00	13	\$0.00	74%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	Existing	2,673.71	15	\$7,716.00	15%	75%	\$0.34	14	14	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	Existing	416.28	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	Existing	74.69	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	3,958.37	3	\$9,525.00	4%	28%	\$0.09	23	22	BEST Simulation
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	596.70	7	\$1,398.00	1%	2%	\$0.14	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	New	8.81	7	\$3.00	1%	3%	\$0.07	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	New	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	New	2,673.71	15	\$7,716.00	15%	75%	\$0.34	7	7	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	New	416.28	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	New	74.69	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	New	3,724.33	3	\$9,525.00	4%	28%	\$0.12	12	11	BEST Simulation
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	5,550.80	6	\$41.65	100%	at stock turnover	\$0.00	23	24	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	Existing	103.93	4	\$795.00	10%	50%	\$2.14	3	4	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	437.13	6	\$10.83	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	965.49	6	\$65.28	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	305.89	5	\$1,200.00	10%	25%	\$0.92	4	4	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	564.50	6	\$4.24	100%	at stock turnover	\$0.00	4	5	Assumed same as Desktop
Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	1,205.57	6	\$15.41	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	810.14	6	\$6.08	100%	at stock turnover	\$0.00	9	9	Assumed same as Desktop
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	New	5,550.80	6	\$41.65	100%	at stock turnover	\$0.00	12	12	ENERGY STAR Calculator
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	New	192.13	4	\$795.00	10%	50%	\$1.13	2	2	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	New	437.13	6	\$10.83	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	New	965.49	6	\$65.28	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	New	570.86	5	\$1,200.00	10%	25%	\$0.49	3	3	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	New	564.50	6	\$4.24	100%	at stock turnover	\$0.00	2	2	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	New	1,205.57	6	\$15.41	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	New	810.14	6	\$6.08	100%	at stock turnover	\$0.00	4	4	Assumed same as Desktop
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	Existing	1,004.95	9	\$102.17	90%	at stock turnover	\$0.02	3	3	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	Existing	337.93	8	\$2,544.00	0%	25%	\$1.27	1	1	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	Existing	1,039.00	9	\$102.00	0%	25%	\$0.02	2	2	PacifiCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	Existing	324.16	15	\$816.00	0%	25%	\$0.29	4	5	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	Existing	646.48	15	\$4,665.00	0%	25%	\$0.81	8	9	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	Existing	602.09	4	\$1,200.00	0%	25%	\$0.58	1	1	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	Existing	2,318.09	10	\$607.38	90%	at stock turnover	\$0.08	21	18	EIA 2011
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	New	1,004.95	9	\$112.39	99%	at stock turnover	\$0.02	2	1	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	New	662.30	8	\$2,544.00	0%	25%	\$0.66	1	1	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	New	1,039.00	9	\$102.00	0%	25%	\$0.02	1	1	PacifiCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	New	317.69	15	\$816.00	0%	25%	\$0.29	2	2	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	New	631.41	15	\$4,665.00	0%	25%	\$0.83	3	4	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	New	602.12	4	\$1,200.00	0%	25%	\$0.58	0	0	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	New	2,318.09	10	\$668.11	99%	at stock turnover	\$0.08	13	12	EIA 2011
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	0.00	15	\$11,700.00	45%	85%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	Existing	5,613.80	15	\$9,525.00	20%	65%	\$0.03	24	31	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	2,728.81	18	\$63,798.00	15%	50%	\$4.76	9	14	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	6,487.69	50	\$75,000.00	15%	25%	\$0.32	6	9	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	0.00	45	\$40,800.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	3,560.08	20	\$10,500.00	15%	50%	\$0.04	12	15	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	-232.25	45	\$23,130.00	15%	35%	\$0.06	0	-1	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	6,591.25	3	\$18,300.00	10%	75%	\$0.16	39	52	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	4,796.27	3	\$9,525.00	4%	28%	\$0.09	11	18	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	Existing	1,712.91	15	\$6,600.00	15%	75%	\$0.41	9	13	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	Existing	16,589.38	18	\$5,100.00	15%	35%	\$0.03	31	40	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	Existing	69,228.17	20	\$44,504.44	100%	at stock turnover	\$0.07	18	18	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	Existing	48,405.22	15	\$2,796.00	13%	50%	\$0.01	180	216	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$19,878.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	16,694.01	20	\$120,000.00	10%	25%	\$0.06	11	11	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	New	3,489.36	3	\$28,800.00	10%	75%	\$0.29	10	10	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	New	3,099.35	15	\$9,525.00	20%	65%	\$0.04	6	6	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	3,465.05	18	\$27.00	15%	35%	\$0.00	3	3	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	3,386.16	50	\$75,000.00	15%	25%	\$0.47	2	2	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	439.78	45	\$40,800.00	15%	50%	\$0.29	1	1	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	1,956.16	20	\$10,500.00	15%	50%	\$0.05	3	3	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	152.78	45	\$23,130.00	15%	50%	\$0.10	0	0	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

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Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	New	2,543.46	3	\$9,525.00	4%	28%	\$0.12	4	4	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	New	902.60	15	\$3,900.00	15%	75%	\$0.43	2	2	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	New	8,863.59	18	\$5,100.00	15%	35%	\$0.06	8	8	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	New	51,358.58	20	\$35,273.05	100%	at stock turnover	\$0.07	4	4	BEST Simulation
Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	New	26,816.57	15	\$2,796.00	19%	50%	\$0.01	38	38	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$19,878.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	11,646.39	5	\$5,400.00	3%	75%	\$0.09	22	24	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	1,010.37	7	\$1,398.00	1%	4%	\$0.17	0	0	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	Existing	73,814.03	20	\$1,116.00	0%	1%	\$0.00	2	2	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	Existing	12,986.45	5	\$1,200.00	1%	10%	\$0.02	3	3	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	Existing	33,779.45	5	\$993.00	25%	65%	\$0.01	14	14	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	Existing	4,358.73	15	\$573.00	15%	50%	\$0.01	4	4	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	Existing	119.39	15	\$9.00	15%	75%	\$0.01	0	0	DEER
Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	Existing	8,123.59	15	\$2,421.00	16%	75%	\$0.03	13	13	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	Existing	28,075.85	20	\$12,501.00	1%	30%	\$0.04	22	23	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	Existing	2,813.02	13	\$90.56	22%	at stock turnover	\$0.00	5	5	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	12,157.34	5	\$5,400.00	3%	75%	\$0.09	23	25	AEG study for PN&L
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	36,806.80	20	\$120,000.00	10%	25%	\$0.06	6	6	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	11,218.05	5	\$5,400.00	6%	75%	\$0.09	8	8	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	981.43	7	\$1,398.00	1%	2%	\$0.14	0	0	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	New	73,610.90	20	\$1,116.00	0%	1%	\$0.00	1	1	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	New	13,135.36	5	\$1,200.00	0%	75%	\$0.02	10	10	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	New	33,691.68	5	\$993.00	25%	65%	\$0.01	5	5	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	New	4,406.93	15	\$573.00	15%	50%	\$0.01	2	2	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	New	121.26	15	\$9.00	15%	75%	\$0.01	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	New	7,918.25	15	\$2,421.00	1%	75%	\$0.03	6	6	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	New	27,260.50	20	\$12,501.00	1%	30%	\$0.04	8	8	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	New	2,813.02	13	\$90.56	22%	at stock turnover	\$0.00	3	3	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	11,663.00	5	\$5,400.00	6%	75%	\$0.09	8	8	AEG study for PN&L
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 50,000 sqft Large Office bldg.	Existing	28,880.17	23	\$22,168.15	8%	at stock turnover	\$0.15	3	3	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	Existing	31,887.97	23	\$12,891.67	18%	at stock turnover	\$0.04	6	6	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	24,307.67	10	\$815.00	15%	75%	\$0.00	7	8	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	2,914.07	15	\$2,610.00	15%	75%	\$0.09	1	1	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	Existing	1,151.23	15	\$3,430.00	15%	75%	\$0.28	0	0	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	6,419.44	15	\$13,000.00	45%	85%	\$8.33	4	5	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	De-stratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	Existing	23,696.58	12	\$22,500.00	15%	30%	\$0.12	9	10	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	4,212.67	10	\$7,500.00	15%	35%	\$0.11	2	2	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	35,319.32	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	7,100.56	15	\$15,875.00	20%	65%	\$0.07	8	9	BEST Simulation
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	Existing	49,596.77	23	\$60,300.41	7%	at stock turnover	\$0.09	3	3	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	699.28	18	\$90.00	15%	50%	\$0.00	1	1	BEST Simulation
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	Existing	27,835.07	10	\$28,170.00	18%	75%	\$0.13	16	19	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	7,513.94	50	\$125,000.00	15%	25%	\$0.62	2	2	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	1,374.58	45	\$68,000.00	15%	35%	\$0.22	1	1	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	3,320.37	20	\$410.00	15%	35%	\$0.03	2	2	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	6,396.46	45	\$52,000.00	15%	35%	\$0.26	3	4	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	4,481.98	20	\$17,500.00	15%	50%	\$0.11	4	4	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	-2,399.87	45	\$38,550.00	15%	35%	\$0.21	-1	-1	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	Existing	20,516.97	15	\$10,775.60	1%	at stock turnover	\$0.06	0	0	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	7,638.54	3	\$30,500.00	10%	75%	\$0.36	12	14	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	Existing	44,081.45	23	\$75,178.95	44%	at stock turnover	\$0.18	8	8	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$123,860.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	5,560.47	3	\$15,875.00	3%	14%	\$0.23	1	2	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	Existing	50,637.41	23	\$19,505.66	19%	at stock turnover	\$0.04	16	16	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	14,631.81	10	\$815.00	15%	75%	\$0.01	4	5	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	18,458.64	4	\$815.00	15%	75%	\$0.01	5	6	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	1,627.28	15	\$2,610.00	15%	75%	\$0.14	0	1	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	Existing	1,105.77	15	\$12,000.00	15%	75%	\$0.94	0	0	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$240,820.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	28,401.27	20	\$200,000.00	10%	30%	\$0.14	6	6	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	New	28,969.73	23	\$11,796.37	21%	at stock turnover	\$0.04	6	6	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	20,111.93	10	\$815.00	15%	75%	\$0.01	2	2	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	2,892.41	15	\$2,610.00	15%	75%	\$0.09	0	0	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$3,430.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	New	5,445.24	3	\$48,000.00	10%	75%	\$0.65	3	4	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	New	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	New	16,920.92	12	\$22,500.00	15%	30%	\$0.15	3	3	Environment Design Guide, November 2007 (PDF)
Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	3,083.87	10	\$7,500.00	15%	50%	\$0.12	1	1	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	28,022.56	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	New	5,229.74	15	\$15,875.00	20%	65%	\$0.08	2	2	BEST Simulation
Large Office	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Large Office bldg.	New	13,757.89	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	41,657.09	23	\$53,676.81	7%	at stock turnover	\$0.11	2	2	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	1,635.99	18	\$90.00	15%	35%	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	New	20,072.44	10	\$28,170.00	18%	75%	\$0.17	2	2	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	5,316.05	50	\$125,000.00	15%	25%	\$0.83	1	1	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	-80.41	45	\$68,000.00	15%	50%	\$0.57	0	0	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	4,585.70	45	\$52,000.00	15%	50%	\$0.29	2	2	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	3,268.29	20	\$17,500.00	15%	50%	\$0.13	1	1	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	-346.75	45	\$38,550.00	15%	50%	\$0.28	0	0	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	New	17,690.16	15	\$10,288.07	1%	at stock turnover	\$0.07	0	0	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	New	36,971.10	23	\$66,921.03	49%	at stock turnover	\$0.19	5	5	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	New	0.00	15	\$123,860.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	3,983.17	3	\$15,875.00	3%	14%	\$0.27	1	1	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$55.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	New	46,374.51	23	\$17,848.42	21%	at stock turnover	\$0.04	11	11	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	11,176.71	10	\$815.00	15%	75%	\$0.01	1	1	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	New	14,204.05	4	\$815.00	15%	75%	\$0.01	2	2	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	2,069.15	15	\$2,610.00	15%	75%	\$0.11	0	0	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$12,000.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$240,820.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	278.22	15	\$15,875.00	20%	65%	\$0.07	1	1	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	755.37	5	\$3,945.00	15%	25%	\$0.86	0	1	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	177.62	10	\$2,845.00	33%	60%	\$1.59	0	1	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	Existing	4,412.78	10	\$4,455.00	15%	30%	\$0.11	4	7	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	396.57	15	-\$17.50	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	505.63	15	\$138.64	100%	at stock turnover	\$0.01	25	25	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	84.27	15	\$13.29	100%	at stock turnover	\$0.02	10	10	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	20.25	15	\$1.98	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	254.92	3	\$30,500.00	10%	75%	\$0.36	1	1	6th Plan
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	85.90	6	\$2.04	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	69.92	15	\$37.11	100%	at stock turnover	\$0.04	4	3	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	221.60	3	\$15,875.00	3%	14%	\$0.23	0	0	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	1,177.48	20	\$200,000.00	10%	30%	\$0.14	1	1	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	205.94	3	\$48,000.00	10%	75%	\$0.65	0	0	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	229.88	15	\$15,875.00	20%	65%	\$0.08	0	0	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	605.74	5	\$3,945.00	15%	25%	\$0.98	0	0	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	172.06	10	\$2,845.00	44%	60%	\$1.50	0	0	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	New	3,627.86	10	\$4,455.00	15%	30%	\$0.13	1	2	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	396.57	15	-\$17.50	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	505.63	15	\$138.64	100%	at stock turnover	\$0.01	11	10	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	84.27	15	\$13.29	100%	at stock turnover	\$0.02	5	5	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	20.25	15	\$1.98	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	85.90	6	\$2.04	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	69.92	15	\$37.11	100%	at stock turnover	\$0.03	2	1	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	179.01	3	\$15,875.00	3%	14%	\$0.27	0	0	BEST Simulation
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	8,105.82	15	\$89.35	43%	at stock turnover	\$0.00	2	2	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	826.12	10	\$168.38	76%	at stock turnover	\$0.03	2	1	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	1,400.52	18	\$402.74	43%	at stock turnover	\$0.03	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	1,487.40	10	\$327.39	66%	at stock turnover	\$0.03	2	1	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	8,105.82	15	\$107.22	52%	at stock turnover	\$0.00	1	1	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	826.12	10	\$202.05	92%	at stock turnover	\$0.04	1	1	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	1,400.52	18	\$483.29	52%	at stock turnover	\$0.04	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	1,487.40	10	\$392.87	79%	at stock turnover	\$0.04	1	1	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 50,000 sqft Large Office bldg.	Existing	1,040.07	23	\$43,872.89	8%	at stock turnover	\$0.15	0	0	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	-7,410.43	15	\$13,000.00	45%	85%	\$8.83	-4	-4	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	5,776.16	10	\$7,500.00	15%	35%	\$0.11	2	3	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	77,418.47	15	\$3,570.00	15%	25%	\$0.00	13	13	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	9,724.01	15	\$15,875.00	20%	65%	\$0.07	9	10	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	Existing	27,730.13	23	\$68,445.52	7%	at stock turnover	\$0.09	2	2	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	-786.09	18	\$90.00	15%	50%	\$0.00	-1	-1	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	24,952.94	45	\$68,000.00	15%	35%	\$0.22	10	11	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	-1,881.35	20	\$410.00	15%	35%	\$0.03	-1	-1	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	9,314.60	45	\$52,000.00	15%	35%	\$0.26	4	4	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	7,489.09	20	\$17,500.00	15%	50%	\$0.11	6	6	BEST Simulation
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	18,877.02	45	\$38,550.00	15%	35%	\$0.21	8	8	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	11,128.54	3	\$30,500.00	10%	75%	\$0.36	15	16	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	Existing	0.00	14	\$215,500.00	3%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	8,097.49	3	\$15,875.00	3%	14%	\$0.23	2	2	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$240,820.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	50,779.21	20	\$200,000.00	10%	30%	\$0.14	7	7	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	New	10,510.53	23	\$133,098.31	8%	at stock turnover	\$0.25	1	1	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	New	10,247.98	3	\$48,000.00	10%	75%	\$0.65	4	5	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	5,522.49	10	\$7,500.00	15%	50%	\$0.12	1	1	AEG research & analysis
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	77,192.64	15	\$3,570.00	15%	25%	\$0.00	4	4	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	New	9,333.65	15	\$15,875.00	20%	65%	\$0.08	3	3	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	25,417.97	23	\$70,116.77	7%	at stock turnover	\$0.11	1	1	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	3,096.56	18	\$90.00	15%	35%	\$0.00	0	0	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	9,567.73	45	\$68,000.00	15%	50%	\$0.57	2	2	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	8,736.77	45	\$52,000.00	15%	50%	\$0.29	2	2	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	7,132.79	20	\$17,500.00	15%	50%	\$0.13	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	11,542.83	45	\$38,550.00	15%	50%	\$0.28	3	3	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	New	0.00	14	\$215,500.00	6%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	7,703.16	3	\$15,875.00	3%	14%	\$0.27	1	1	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$55.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$240,820.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	2,213.62	15	\$15,875.00	20%	65%	\$0.07	6	9	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	340.51	15	-\$15.03	100%	at stock turnover	-\$0.02	0	1	EIA 2011
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	434.15	15	\$119.04	100%	at stock turnover	\$0.01	51	51	EIA 2011
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	12,704.70	5	\$52,150.00	5%	15%	\$0.66	2	5	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	Existing	20,296.46	5	\$3,265.00	15%	50%	\$0.03	14	25	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	12,255.86	12	\$20,000.00	3%	25%	\$0.15	14	30	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	Existing	1,839.58	16	\$2,060.00	1%	3%	\$0.09	0	0	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	13,167.56	10	\$8,520.00	7%	45%	\$0.07	19	39	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	Existing	0.00	25	\$20,500.00	15%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	Existing	1,609.76	5	\$5,500.00	10%	25%	\$0.44	0	1	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	119.83	15	\$18.90	100%	at stock turnover	\$0.02	195	192	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	28.79	15	\$2.82	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	1,955.34	3	\$30,500.00	10%	75%	\$0.36	7	11	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	129.45	6	\$3.07	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	105.35	15	\$55.92	100%	at stock turnover	\$0.04	41	30	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,701.43	3	\$15,875.00	3%	14%	\$0.23	1	3	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	9,608.63	20	\$200,000.00	10%	30%	\$0.14	4	5	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	1,618.19	3	\$48,000.00	10%	75%	\$0.65	2	3	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	1,740.21	15	\$15,875.00	20%	65%	\$0.08	2	2	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	340.51	15	-\$15.03	100%	at stock turnover	-\$0.02	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	434.15	15	\$119.04	100%	at stock turnover	\$0.01	22	21	EIA 2011
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	11,416.36	5	\$52,150.00	5%	15%	\$0.71	1	1	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	New	18,176.30	5	\$3,265.00	15%	50%	\$0.03	4	6	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	10,126.67	12	\$20,000.00	4%	25%	\$0.17	4	6	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	New	1,545.08	16	\$2,060.00	1%	3%	\$0.10	0	0	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	10,883.52	10	\$8,520.00	22%	45%	\$0.08	2	4	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	New	0.00	25	\$20,500.00	18%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Large Office bldg.	New	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	New	1,088.90	5	\$5,500.00	10%	25%	\$0.61	0	0	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	119.83	15	\$18.90	100%	at stock turnover	\$0.02	86	85	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	28.79	15	\$2.82	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	129.45	6	\$3.07	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	105.35	15	\$55.92	100%	at stock turnover	\$0.03	18	11	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,407.87	3	\$15,875.00	3%	14%	\$0.27	0	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	118.12	7	\$1,395.00	1%	4%	\$0.19	0	0	Developed from RTF
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	Existing	1.72	7	\$30.00	1%	3%	\$3.33	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	Existing	84.14	10	\$195.00	1%	3%	\$0.34	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	Existing	2,084.80	15	\$12,385.00	15%	75%	\$0.71	3	3	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,618.88	3	\$15,875.00	3%	14%	\$0.23	1	1	BEST Simulation
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	127.06	7	\$1,395.00	1%	2%	\$0.19	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	New	2,084.80	15	\$12,385.00	15%	75%	\$0.71	1	1	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Large Office bldg.	New	124.49	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,579.21	3	\$15,875.00	3%	14%	\$0.27	0	0	BEST Simulation
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$500,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	32,896.88	6	\$246.84	100%	at stock turnover	\$0.00	34	36	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	Existing	1,037.96	4	\$1,325.00	10%	50%	\$0.36	7	8	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,476.66	6	\$160.53	100%	at stock turnover	\$0.01	7	7	ENERGY STAR Calculator
Large Office	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	5,721.99	6	\$386.88	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	3,064.11	5	\$2,000.00	10%	25%	\$0.15	8	9	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	557.59	6	\$1.67	40%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	5,954.04	6	\$76.12	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	New	0.00	20	\$150,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	32,896.88	6	\$246.84	100%	at stock turnover	\$0.00	14	14	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	New	1,071.86	4	\$1,325.00	10%	50%	\$0.34	2	3	Developed from RTF
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	6,476.66	6	\$160.53	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	3,178.65	5	\$2,000.00	10%	25%	\$0.15	3	3	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	557.59	6	\$1.84	44%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	5,954.04	6	\$76.12	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Large Office	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	4,001.08	6	\$30.02	100%	at stock turnover	\$0.00	4	4	Assumed same as Desktop
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	Existing	429.01	9	\$21.66	45%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	Existing	1,039.00	9	\$105.00	0%	10%	\$0.02	0	0	PacificCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$815.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$4,665.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$14,530.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	Existing	1,979.19	10	\$257.57	45%	at stock turnover	\$0.04	2	2	EIA 2011
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	New	0.00	5	\$1,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	New	429.01	9	\$26.00	54%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	New	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	New	1,039.00	9	\$105.00	0%	10%	\$0.02	0	0	PacifiCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	New	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	New	0.00	15	\$815.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	New	0.00	15	\$4,665.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	New	0.00	4	\$14,530.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	New	1,979.19	10	\$309.08	54%	at stock turnover	\$0.04	1	1	EIA 2011
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	401.83	15	\$13,000.00	45%	85%	\$8.19	0	0	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	5,739.48	15	\$15,875.00	20%	65%	\$0.07	6	8	BEST Simulation
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	3,062.48	18	\$90.00	15%	50%	\$0.00	3	3	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	6,634.58	50	\$125,000.00	15%	25%	\$0.62	2	2	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	-385.96	45	\$68,000.00	15%	35%	\$0.22	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	40.45	20	\$410.00	15%	35%	\$0.03	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	3,639.11	20	\$17,500.00	15%	50%	\$0.11	3	4	BEST Simulation
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	-237.39	45	\$38,550.00	15%	35%	\$0.21	0	0	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	6,769.14	3	\$30,500.00	10%	75%	\$0.36	11	13	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	4,903.67	3	\$15,875.00	3%	14%	\$0.23	1	2	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	Existing	1,765.05	15	\$11,000.00	15%	75%	\$0.66	2	3	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	Existing	16,964.91	18	\$8,500.00	15%	35%	\$0.05	8	10	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	Existing	50,542.96	20	\$67,405.53	100%	at stock turnover	\$0.14	5	5	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	Existing	49,566.61	15	\$8,230.00	13%	50%	\$0.02	48	55	BEST Simulation
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$240,820.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	24,337.86	20	\$200,000.00	10%	30%	\$0.14	4	4	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	New	5,063.26	3	\$48,000.00	10%	75%	\$0.65	3	3	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	0.00	10	\$7,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	New	4,437.41	15	\$15,875.00	20%	65%	\$0.08	2	2	BEST Simulation
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	3,459.18	18	\$90.00	15%	35%	\$0.00	1	1	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	4,942.37	50	\$125,000.00	15%	25%	\$0.83	0	0	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	71.21	45	\$68,000.00	15%	50%	\$0.57	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	2,800.71	20	\$17,500.00	15%	50%	\$0.13	1	1	BEST Simulation
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	220.82	45	\$38,550.00	15%	50%	\$0.28	0	0	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	3,692.30	3	\$15,875.00	3%	14%	\$0.27	0	0	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$55.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	New	1,349.89	15	\$6,500.00	15%	75%	\$0.50	1	1	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	New	13,194.00	18	\$8,500.00	15%	35%	\$0.06	2	2	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	New	42,685.27	20	\$66,864.89	100%	at stock turnover	\$0.16	1	1	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	New	39,095.59	15	\$8,230.00	19%	50%	\$0.02	11	11	BEST Simulation
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$240,820.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	3,689.00	5	\$9,000.00	3%	75%	\$0.49	6	6	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	1,110.59	7	\$1,395.00	1%	4%	\$0.19	0	0	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	Existing	23,675.23	20	\$1,115.00	1%	7%	\$0.00	3	3	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,114.47	5	\$2,000.00	1%	10%	\$0.11	1	1	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	Existing	10,645.10	5	\$660.00	25%	65%	\$0.01	4	4	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	Existing	1,374.18	15	\$520.00	15%	25%	\$0.04	0	0	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	Existing	214.24	15	\$15.00	15%	75%	\$0.01	0	0	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	2,475.21	15	\$3,125.00	16%	75%	\$0.13	3	3	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	Existing	9,092.69	20	\$12,500.00	1%	30%	\$0.13	6	6	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	Existing	900.13	13	\$61.66	68%	at stock turnover	\$0.01	1	1	BEST Simulation
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	3,850.48	5	\$9,000.00	3%	75%	\$0.49	6	7	AEG study for PN&L
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	11,651.06	20	\$200,000.00	10%	30%	\$0.14	2	2	AEG research & analysis
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	3,673.77	5	\$9,000.00	6%	75%	\$0.49	2	2	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	1,064.10	7	\$1,395.00	1%	2%	\$0.19	0	0	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	New	23,610.76	20	\$1,115.00	1%	7%	\$0.00	1	1	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	New	4,157.53	5	\$2,000.00	0%	75%	\$0.11	2	2	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	New	10,610.74	5	\$660.00	25%	65%	\$0.01	1	1	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	New	1,388.40	15	\$520.00	15%	25%	\$0.04	0	0	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	New	214.51	15	\$15.00	15%	75%	\$0.01	0	0	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	New	2,415.81	15	\$3,125.00	1%	75%	\$0.13	1	1	BEST Simulation
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	New	8,854.51	20	\$12,500.00	1%	30%	\$0.13	2	2	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	New	900.13	13	\$61.66	68%	at stock turnover	\$0.01	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	3,533.77	5	\$9,000.00	6%	75%	\$0.49	2	2	AEG study for PN&L
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Large Retail bldg.	Existing	21,945.37	23	\$24,184.01	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	Existing	68,764.20	23	\$22,329.32	12%	at stock turnover	\$0.03	14	14	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	46,227.58	10	\$810.00	15%	75%	\$0.00	9	10	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	5,734.51	15	\$2,180.00	15%	75%	\$0.04	1	1	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	Existing	2,114.81	15	\$3,830.00	15%	75%	\$0.17	0	1	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	Existing	51,835.90	12	\$45,000.00	15%	30%	\$0.10	19	23	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	9,214.43	10	\$15,000.00	15%	35%	\$0.08	4	5	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	80,875.65	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	16,655.39	15	\$31,750.00	20%	65%	\$0.06	19	21	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	Existing	31,659.69	15	\$72,956.65	3%	at stock turnover	\$0.28	2	2	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	Existing	114,125.20	23	\$94,565.49	2%	at stock turnover	\$0.14	2	2	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	1,863.50	18	\$100.00	15%	25%	\$0.00	0	1	BEST Simulation
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	Existing	67,400.94	10	\$31,450.00	18%	75%	\$0.06	41	48	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	17,627.97	50	\$250,000.00	15%	25%	\$0.75	4	5	6th Plan
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	760.52	45	\$136,000.00	15%	35%	\$0.11	0	0	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	10,085.89	20	\$820.00	15%	35%	\$0.03	5	6	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	14,999.02	45	\$104,000.00	15%	35%	\$0.21	7	8	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	9,803.77	20	\$35,000.00	15%	50%	\$0.10	8	9	BEST Simulation
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	-5,608.77	45	\$77,100.00	15%	35%	\$0.14	-3	-3	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	PTAC - EER 12.2	per 100,000 sqft Large Retail bldg.	Existing	47,213.70	15	\$24,796.83	1%	at stock turnover	\$0.06	1	1	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	17,923.10	3	\$61,000.00	10%	75%	\$0.30	28	32	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$138,300.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	13,002.64	3	\$31,750.00	0%	3%	\$0.19	1	1	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	32,402.62	10	\$810.00	15%	75%	\$0.00	2	2	DEER
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	40,358.35	4	\$810.00	15%	75%	\$0.01	2	2	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	3,752.75	15	\$2,180.00	15%	75%	\$0.06	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	Existing	2,026.80	15	\$10,040.00	15%	75%	\$0.43	0	0	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	65,775.05	20	\$400,000.00	10%	30%	\$0.12	14	14	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Large Retail bldg.	New	20,365.87	23	\$20,950.79	3%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	New	56,218.15	23	\$19,622.20	16%	at stock turnover	\$0.04	9	9	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	35,960.58	10	\$810.00	15%	75%	\$0.00	3	3	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	4,780.64	15	\$2,180.00	15%	75%	\$0.05	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$3,830.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	New	13,476.84	3	\$96,000.00	10%	75%	\$0.54	9	9	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	New	39,182.55	12	\$45,000.00	15%	30%	\$0.13	6	6	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	7,141.97	10	\$15,000.00	15%	50%	\$0.09	3	3	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	64,435.98	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	New	12,912.77	15	\$31,750.00	20%	65%	\$0.07	6	6	BEST Simulation
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	New	31,659.69	15	\$102,139.31	3%	at stock turnover	\$0.40	1	1	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	New	105,900.83	23	\$81,922.80	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	2,649.71	18	\$90.00	15%	25%	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	New	51,846.33	10	\$31,450.00	18%	75%	\$0.08	5	5	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	13,155.85	50	\$250,000.00	15%	25%	\$1.03	1	1	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-956.55	45	\$136,000.00	15%	50%	\$0.13	0	0	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	11,352.11	45	\$104,000.00	15%	50%	\$0.23	4	4	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	7,569.08	20	\$35,000.00	15%	50%	\$0.11	3	3	BEST Simulation
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	-859.28	45	\$77,100.00	15%	50%	\$0.20	0	0	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$138,300.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	9,841.17	3	\$31,750.00	0%	3%	\$0.22	0	0	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Large Retail bldg.	New	92,430.05	23	\$29,689.24	4%	at stock turnover	\$0.03	4	4	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	22,294.88	10	\$810.00	15%	75%	\$0.00	0	0	DEER
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	27,677.69	4	\$810.00	15%	75%	\$0.01	1	1	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	3,246.94	15	\$2,180.00	15%	75%	\$0.06	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$10,040.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	1,359.49	15	\$31,750.00	20%	65%	\$0.06	3	5	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	3,645.55	5	\$45,480.00	15%	25%	\$2.03	2	4	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	2,563.29	10	\$26,030.00	33%	60%	\$1.03	4	8	AEG research & analysis
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	Existing	21,543.68	10	\$40,740.00	15%	30%	\$0.21	17	35	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	260.82	15	-\$10.07	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	332.55	15	\$79.78	100%	at stock turnover	\$0.01	79	74	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	50.49	15	\$9.51	100%	at stock turnover	\$0.03	46	45	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	11.81	15	\$1.01	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	1,250.70	3	\$61,000.00	10%	75%	\$0.30	4	7	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	57.48	6	\$1.19	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	46.78	15	\$21.73	100%	at stock turnover	\$0.03	23	17	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	1,167.25	3	\$31,750.00	0%	3%	\$0.19	0	0	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	6,140.83	20	\$400,000.00	10%	30%	\$0.12	2	3	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	999.19	3	\$96,000.00	10%	75%	\$0.54	1	2	6th Plan
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	1,111.68	15	\$31,750.00	20%	65%	\$0.07	1	1	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	2,907.61	5	\$45,480.00	15%	25%	\$2.36	0	1	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	2,176.69	10	\$26,030.00	44%	60%	\$1.11	1	1	AEG research & analysis
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	New	17,233.31	10	\$40,740.00	15%	30%	\$0.24	4	6	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	260.82	15	-\$10.07	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	332.55	15	\$79.78	100%	at stock turnover	\$0.01	31	29	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	50.49	15	\$9.51	100%	at stock turnover	\$0.03	18	18	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	11.81	15	\$1.01	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	57.48	6	\$1.19	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	46.78	15	\$21.73	100%	at stock turnover	\$0.03	9	5	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	933.71	3	\$31,750.00	0%	3%	\$0.22	0	0	BEST Simulation
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	44,038.58	15	\$446.06	40%	at stock turnover	\$0.00	12	12	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	4,488.26	10	\$541.21	45%	at stock turnover	\$0.02	5	4	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	7,608.97	18	\$2,010.68	40%	at stock turnover	\$0.03	2	2	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	8,080.97	10	\$1,317.86	49%	at stock turnover	\$0.02	6	6	Developed from RTF "ComCookingConvectionOven" v2.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	44,038.58	15	\$669.09	59%	at stock turnover	\$0.00	8	8	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	4,488.26	10	\$811.82	68%	at stock turnover	\$0.03	3	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	7,608.97	18	\$3,016.02	59%	at stock turnover	\$0.04	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	8,080.97	10	\$1,976.79	73%	at stock turnover	\$0.04	4	3	Developed from RTF "ComCookingConvectionOven" v2.0
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Large Retail bldg.	Existing	2,751.80	23	\$210,708.79	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	15,864.56	10	\$15,000.00	15%	35%	\$0.08	4	4	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	210,883.40	15	\$3,570.00	15%	25%	\$0.00	24	24	Developed from RTF
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	26,707.76	15	\$31,750.00	20%	65%	\$0.06	16	17	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	6,905.31	18	\$100.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	104,845.98	45	\$136,000.00	15%	35%	\$0.11	28	29	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	-6,948.20	20	\$820.00	15%	35%	\$0.03	-2	-2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	25,498.34	45	\$104,000.00	15%	35%	\$0.21	7	7	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	20,569.15	20	\$35,000.00	15%	50%	\$0.10	10	10	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	50,930.85	45	\$77,100.00	15%	35%	\$0.14	13	14	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	30,464.06	3	\$61,000.00	10%	75%	\$0.30	26	27	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	Existing	0.00	14	\$183,330.00	3%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	22,104.68	3	\$31,750.00	0%	3%	\$0.19	1	1	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	140,695.12	20	\$400,000.00	10%	30%	\$0.12	11	11	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Large Retail bldg.	New	3,675.91	23	\$211,946.82	3%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	New	27,719.86	3	\$96,000.00	10%	75%	\$0.54	7	7	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	15,301.36	10	\$15,000.00	15%	50%	\$0.09	2	2	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	210,817.66	15	\$3,570.00	15%	25%	\$0.00	7	7	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	New	25,861.18	15	\$31,750.00	20%	65%	\$0.07	5	5	BEST Simulation
Large Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	New	31,600.62	23	\$172,260.42	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	2,666.07	18	\$90.00	15%	25%	\$0.00	0	0	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	87,168.63	45	\$136,000.00	15%	50%	\$0.13	12	12	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	23,350.53	45	\$104,000.00	15%	50%	\$0.23	3	3	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	19,763.03	20	\$35,000.00	15%	50%	\$0.11	3	3	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	30,881.68	45	\$77,100.00	15%	50%	\$0.20	4	4	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	New	0.00	14	\$183,330.00	6%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	20,242.70	3	\$31,750.00	0%	3%	\$0.22	0	0	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	9,116.59	15	\$31,750.00	20%	65%	\$0.06	22	36	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	699.46	15	-\$27.01	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	891.81	15	\$213.96	100%	at stock turnover	\$0.01	266	248	EIA 2011
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	46,594.43	5	\$189,170.00	5%	15%	\$0.65	8	17	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	Existing	74,143.11	5	\$11,570.00	15%	50%	\$0.03	49	91	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	54,241.64	12	\$40,000.00	3%	25%	\$0.07	61	131	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	Existing	7,827.55	16	\$7,290.00	1%	3%	\$0.07	1	2	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	58,715.83	10	\$30,170.00	7%	45%	\$0.06	84	169	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	Existing	0.00	25	\$41,000.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$33,000.00	7%	15%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	Existing	7,394.69	5	\$11,000.00	10%	25%	\$0.19	1	5	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	186.81	15	\$35.19	100%	at stock turnover	\$0.03	702	687	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	43.71	15	\$3.75	100%	at stock turnover	\$0.01	0	1	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	8,673.47	3	\$61,000.00	10%	75%	\$0.30	29	49	6th Plan
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	200.88	6	\$4.17	100%	at stock turnover	\$0.00	0	1	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	163.49	15	\$75.93	100%	at stock turnover	\$0.03	184	134	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	7,518.86	3	\$31,750.00	0%	3%	\$0.19	1	3	BEST Simulation
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	41,982.65	20	\$400,000.00	10%	30%	\$0.12	14	18	AEG research & analysis
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	7,358.17	3	\$96,000.00	10%	75%	\$0.54	8	12	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	7,894.96	15	\$31,750.00	20%	65%	\$0.07	6	9	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	699.46	15	-\$27.01	100%	at stock turnover	-\$0.01	0	1	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	891.81	15	\$213.96	100%	at stock turnover	\$0.01	105	98	EIA 2011
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	40,366.97	5	\$189,170.00	5%	15%	\$0.70	2	3	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	New	64,066.56	5	\$11,570.00	15%	50%	\$0.03	12	18	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	46,729.79	12	\$40,000.00	4%	25%	\$0.08	16	23	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	New	6,750.84	16	\$7,290.00	1%	3%	\$0.08	0	0	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	49,380.23	10	\$30,170.00	22%	45%	\$0.06	9	13	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	New	0.00	25	\$41,000.00	18%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$33,000.00	7%	15%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	New	5,081.44	5	\$11,000.00	10%	25%	\$0.26	0	1	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	186.81	15	\$35.19	100%	at stock turnover	\$0.03	278	272	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	43.71	15	\$3.75	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	200.88	6	\$4.17	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	163.49	15	\$75.93	100%	at stock turnover	\$0.03	72	42	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	6,385.06	3	\$31,750.00	0%	3%	\$0.22	0	1	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	375.09	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	Existing	5.49	7	\$30.00	1%	3%	\$1.05	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	Existing	268.23	10	\$190.00	1%	3%	\$0.11	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	Existing	5,323.66	15	\$8,370.00	15%	75%	\$0.19	4	4	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	1,387.62	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Large Retail bldg.	Existing	248.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,689.39	3	\$31,750.00	0%	3%	\$0.19	1	1	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	445.88	7	\$1,400.00	1%	2%	\$0.17	0	0	Developed from RTF
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Large Retail bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	New	5,329.25	15	\$8,370.00	15%	75%	\$0.19	1	1	AEG research & analysis
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	New	1,387.62	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	4,506.36	3	\$31,750.00	0%	3%	\$0.22	0	0	BEST Simulation
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	12,619.34	6	\$94.69	100%	at stock turnover	\$0.00	13	13	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	Existing	1,043.29	4	\$2,650.00	10%	50%	\$0.70	8	9	Developed from RTF
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,484.47	6	\$61.58	100%	at stock turnover	\$0.01	2	3	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,194.97	6	\$148.41	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	3,122.49	5	\$4,000.00	10%	25%	\$0.30	9	10	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	385.01	6	\$2.89	100%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	3,425.98	6	\$43.80	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,302.24	6	\$14.17	82%	at stock turnover	\$0.00	5	6	Assumed same as Desktop
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	12,619.34	6	\$94.69	100%	at stock turnover	\$0.00	5	5	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	New	1,171.92	4	\$2,650.00	10%	50%	\$0.60	2	3	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,484.47	6	\$61.58	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,194.97	6	\$148.41	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	3,564.71	5	\$4,000.00	10%	25%	\$0.26	3	3	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	385.01	6	\$2.89	100%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	3,425.98	6	\$43.80	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,302.24	6	\$17.00	98%	at stock turnover	\$0.00	2	2	Assumed same as Desktop
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	Existing	5,986.96	9	\$352.82	52%	at stock turnover	\$0.01	2	2	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	Existing	2,508.13	8	\$2,540.00	0%	25%	\$0.17	1	2	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	Existing	1,039.00	9	\$100.00	0%	25%	\$0.02	0	0	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	Existing	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	Existing	1,804.93	15	\$820.00	0%	25%	\$0.05	4	4	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	Existing	3,604.53	15	\$4,670.00	0%	25%	\$0.15	7	8	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	Existing	3,622.72	4	\$10.00	0%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	Existing	13,810.00	10	\$2,097.41	52%	at stock turnover	\$0.04	16	14	EIA 2011
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	New	5,986.96	9	\$529.23	79%	at stock turnover	\$0.01	1	1	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	New	3,043.81	8	\$2,540.00	0%	25%	\$0.14	1	1	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	New	1,039.00	9	\$100.00	0%	25%	\$0.02	0	0	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	New	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	New	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	New	1,748.31	15	\$820.00	0%	25%	\$0.05	1	1	Developed from RTF
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	New	3,478.25	15	\$4,670.00	0%	25%	\$0.15	3	3	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	New	3,620.68	4	\$10.00	0%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	New	13,810.00	10	\$3,146.11	79%	at stock turnover	\$0.07	9	8	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	5,291.56	15	\$31,750.00	20%	65%	\$0.06	5	7	BEST Simulation
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	2,901.84	18	\$100.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	6,090.47	50	\$250,000.00	15%	25%	\$0.75	1	2	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	-526.48	45	\$136,000.00	15%	35%	\$0.11	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	81.30	20	\$820.00	15%	35%	\$0.02	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	3,316.25	20	\$35,000.00	15%	50%	\$0.10	3	3	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	-216.44	45	\$77,100.00	15%	35%	\$0.14	0	0	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	6,187.20	3	\$61,000.00	10%	75%	\$0.30	9	12	6th Plan
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,469.71	3	\$31,750.00	0%	3%	\$0.19	0	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	Existing	1,608.05	15	\$22,000.00	15%	75%	\$1.40	2	3	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	Existing	15,310.69	18	\$17,000.00	15%	35%	\$0.11	7	9	DEER
Large Retail	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Large Retail bldg.	Existing	71,679.37	20	\$62,046.17	100%	at stock turnover	\$0.09	33	33	BEST Simulation
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	Existing	45,071.04	15	\$7,000.00	13%	50%	\$0.02	39	48	BEST Simulation
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	17,830.86	20	\$400,000.00	10%	30%	\$0.12	3	3	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	New	3,683.35	3	\$96,000.00	10%	75%	\$0.54	2	2	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	New	3,250.87	15	\$31,750.00	20%	65%	\$0.07	1	1	BEST Simulation
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	1,616.59	18	\$90.00	15%	25%	\$0.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	3,595.64	50	\$250,000.00	15%	25%	\$1.03	0	0	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-536.82	45	\$136,000.00	15%	50%	\$0.13	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	2,051.88	20	\$35,000.00	15%	50%	\$0.11	1	1	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	159.84	45	\$77,100.00	15%	50%	\$0.20	0	0	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	2,660.92	3	\$31,750.00	0%	3%	\$0.22	0	0	BEST Simulation
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	New	949.36	15	\$13,000.00	15%	75%	\$1.30	0	0	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	New	9,140.28	18	\$17,000.00	15%	35%	\$0.17	1	1	DEER
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	New	28,121.10	15	\$7,000.00	19%	50%	\$0.03	7	7	BEST Simulation
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	8,798.87	5	\$18,000.00	3%	75%	\$0.41	11	12	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	989.83	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	Existing	55,588.39	20	\$1,120.00	0%	2%	\$0.00	2	2	Developed from RTF (Residential)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	9,598.83	5	\$4,000.00	1%	10%	\$0.09	2	2	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	Existing	25,342.67	5	\$1,320.00	25%	65%	\$0.01	7	7	DEER
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$690.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	Existing	381.08	15	\$30.00	15%	75%	\$0.01	0	0	DEER
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	6,172.04	15	\$4,420.00	16%	75%	\$0.08	6	7	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	Existing	21,215.39	20	\$25,000.00	1%	30%	\$0.11	11	11	BEST Simulation
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	Existing	2,119.41	13	\$108.23	63%	at stock turnover	\$0.01	3	2	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	9,185.11	5	\$18,000.00	3%	75%	\$0.41	11	12	AEG study for PN&L
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	27,770.04	20	\$400,000.00	10%	30%	\$0.12	3	3	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	8,422.87	5	\$18,000.00	6%	75%	\$0.42	3	3	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	947.89	7	\$1,400.00	1%	2%	\$0.17	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	New	55,437.22	20	\$1,120.00	0%	2%	\$0.00	1	1	Developed from RTF (Residential)
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	New	9,655.49	5	\$4,000.00	0%	75%	\$0.09	4	4	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	New	25,247.73	5	\$1,320.00	25%	65%	\$0.01	2	2	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$690.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	New	381.37	15	\$30.00	15%	75%	\$0.01	0	0	DEER
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	6,233.71	15	\$4,420.00	1%	75%	\$0.08	2	2	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	New	20,566.82	20	\$25,000.00	1%	30%	\$0.11	3	3	BEST Simulation
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	New	2,119.41	13	\$108.23	63%	at stock turnover	\$0.01	1	1	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	8,756.90	5	\$18,000.00	6%	75%	\$0.42	3	3	AEG study for PN&L
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	57,659.95	23	\$74,922.38	20%	at stock turnover	\$0.04	137	131	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	Existing	11,706.77	23	\$5,169.18	5%	at stock turnover	\$0.05	4	4	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	6,328.88	10	\$814.00	15%	75%	\$0.02	4	4	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	2,637.92	15	\$1,617.00	15%	75%	\$0.06	2	2	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	Existing	125.22	15	\$588.50	15%	75%	\$0.43	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	Destratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	Existing	19,885.49	12	\$24,750.00	15%	30%	\$0.14	50	63	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	3,534.76	10	\$8,250.00	15%	35%	\$0.12	12	14	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	36,060.23	15	\$3,569.50	15%	75%	\$0.00	67	78	Developed from RTF
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	Existing	14,031.45	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	78,676.98	23	\$95,458.76	3%	at stock turnover	\$0.02	6	6	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	Existing	17,409.15	10	\$4,834.50	18%	75%	\$0.04	35	39	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	6,794.33	50	\$137,500.00	15%	25%	\$0.91	11	15	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	-3,987.39	45	\$74,800.00	15%	35%	\$0.36	-13	-15	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	5,763.55	45	\$57,200.00	15%	35%	\$0.30	19	22	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	3,760.88	20	\$19,250.00	15%	50%	\$0.14	22	25	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	-2,152.26	45	\$42,405.00	15%	35%	\$0.22	-7	-8	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	12,885.10	15	\$258.50	15%	75%	\$0.01	135	159	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	Existing	20,924.93	15	\$10,989.86	31%	at stock turnover	\$0.06	127	117	BEST Simulation
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	6,907.30	3	\$33,550.00	10%	75%	\$0.43	75	87	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	Existing	6,492.50	23	\$10,339.73	9%	at stock turnover	\$0.17	2	2	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$21,252.00	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$148.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	Existing	20,996.95	23	\$7,821.20	20%	at stock turnover	\$0.04	55	55	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	5,820.88	10	\$814.00	15%	75%	\$0.02	13	17	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	7,252.05	4	\$814.00	15%	75%	\$0.03	17	21	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	3,849.09	15	\$1,617.00	15%	75%	\$0.04	8	11	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	Existing	139.07	15	\$7,441.50	15%	75%	\$4.44	0	0	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$320,760.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	27,212.83	20	\$220,000.00	10%	25%	\$0.12	33	34	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	60,719.52	23	\$59,593.69	23%	at stock turnover	\$0.03	123	117	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	New	10,539.06	23	\$4,853.51	6%	at stock turnover	\$0.05	4	4	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	4,797.38	10	\$814.00	15%	75%	\$0.02	1	1	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	2,338.96	15	\$1,617.00	15%	75%	\$0.06	1	1	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$588.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	New	5,531.60	3	\$52,800.00	10%	75%	\$0.80	29	30	6th Plan
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	New	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	De-stratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	New	16,188.01	12	\$24,750.00	15%	30%	\$0.16	19	21	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	2,875.08	10	\$8,250.00	15%	50%	\$0.14	8	9	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	27,465.95	15	\$3,569.50	15%	75%	\$0.00	24	25	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	New	14,031.45	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	82,943.89	23	\$75,928.45	3%	at stock turnover	\$0.02	17	17	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	New	14,937.36	10	\$4,834.50	18%	75%	\$0.04	5	5	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	11,430.54	15	\$258.50	15%	75%	\$0.04	56	58	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	5,400.68	50	\$137,500.00	15%	25%	\$1.08	4	5	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	-1,395.75	45	\$74,800.00	15%	50%	\$1.84	-4	-4	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	4,655.44	45	\$57,200.00	15%	50%	\$0.35	13	14	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	2,999.89	20	\$19,250.00	15%	50%	\$0.17	8	9	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	-348.56	45	\$42,405.00	15%	50%	\$0.37	-1	-1	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	12,432.98	15	\$258.50	15%	75%	\$0.00	61	64	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	New	18,041.91	15	\$10,492.64	37%	at stock turnover	\$0.07	70	64	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	New	5,344.15	23	\$9,416.59	11%	at stock turnover	\$0.18	2	2	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	New	0.00	15	\$21,252.00	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$55.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	New	18,981.07	23	\$7,343.57	24%	at stock turnover	\$0.04	44	44	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	4,382.42	10	\$814.00	15%	75%	\$0.02	5	5	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	New	5,441.03	4	\$814.00	15%	75%	\$0.03	6	6	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	3,373.56	15	\$1,617.00	15%	75%	\$0.04	4	4	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$7,441.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$320,760.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	1,793.07	5	\$1,083.50	15%	25%	\$0.10	7	15	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	713.62	10	\$3,586.00	33%	60%	\$0.51	8	16	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	Existing	10,303.33	10	\$5,615.50	15%	30%	\$0.06	65	125	AEG research & analysis
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	756.77	15	-\$38.96	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	964.86	15	\$308.65	100%	at stock turnover	\$0.01	410	384	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	196.05	15	\$36.08	100%	at stock turnover	\$0.03	31	30	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	47.10	15	\$5.38	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	592.41	3	\$33,550.00	10%	75%	\$0.43	16	26	6th Plan
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	194.08	6	\$5.37	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	157.96	15	\$97.81	100%	at stock turnover	\$0.04	110	80	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	2,791.10	20	\$220,000.00	10%	25%	\$0.12	7	8	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	488.45	3	\$52,800.00	10%	75%	\$0.80	5	7	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	1,508.80	5	\$1,083.50	15%	25%	\$0.11	2	3	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	773.34	10	\$3,586.00	44%	60%	\$0.43	2	3	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	New	8,674.66	10	\$5,615.50	15%	30%	\$0.07	20	30	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	756.77	15	-\$38.96	100%	at stock turnover	-\$0.02	1	2	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	964.86	15	\$308.65	100%	at stock turnover	\$0.01	207	195	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	196.05	15	\$36.08	100%	at stock turnover	\$0.03	15	15	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	47.10	15	\$5.38	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	194.08	6	\$5.37	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	157.96	15	\$97.81	100%	at stock turnover	\$0.04	54	32	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	44,821.91	15	\$344.48	30%	at stock turnover	\$0.00	71	69	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	4,568.09	10	\$255.92	21%	at stock turnover	\$0.01	18	15	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	7,744.32	18	\$1,552.81	30%	at stock turnover	\$0.02	9	9	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	8,224.71	10	\$378.53	14%	at stock turnover	\$0.01	14	12	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	44,821.91	15	\$447.83	39%	at stock turnover	\$0.00	51	49	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	4,568.09	10	\$332.70	27%	at stock turnover	\$0.01	11	10	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	7,744.32	18	\$2,018.65	39%	at stock turnover	\$0.03	6	6	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	8,224.71	10	\$492.09	18%	at stock turnover	\$0.01	8	8	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	16,182.17	23	\$26,928.48	20%	at stock turnover	\$0.04	38	36	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	5,442.37	10	\$8,250.00	15%	35%	\$0.12	15	15	AEG research & analysis
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	78,492.86	15	\$3,569.50	15%	75%	\$0.00	220	220	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	17,619.14	23	\$22,582.47	3%	at stock turnover	\$0.02	1	1	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	20,529.93	45	\$74,800.00	15%	35%	\$0.36	54	58	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	8,915.99	45	\$57,200.00	15%	35%	\$0.30	24	25	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	7,056.60	20	\$19,250.00	15%	50%	\$0.14	33	35	BEST Simulation
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	17,788.59	45	\$42,405.00	15%	35%	\$0.22	48	50	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	-15,723.84	15	\$258.50	15%	75%	\$0.01	-126	-140	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	10,546.37	3	\$33,550.00	10%	75%	\$0.43	90	97	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	Existing	0.00	14	\$225,846.50	3%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$148.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$320,760.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	41,188.99	20	\$220,000.00	10%	25%	\$0.12	31	31	AEG research & analysis
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	7,199.22	23	\$22,085.19	23%	at stock turnover	\$0.03	13	13	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	New	8,361.00	3	\$52,800.00	10%	75%	\$0.80	27	28	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	4,350.18	10	\$8,250.00	15%	50%	\$0.14	8	8	AEG research & analysis
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	80,711.35	15	\$3,569.50	15%	75%	\$0.00	78	78	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	14,914.27	23	\$17,962.26	3%	at stock turnover	\$0.02	3	3	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	-10,914.99	15	\$258.50	15%	75%	\$0.04	-33	-33	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	4,621.53	45	\$74,800.00	15%	50%	\$1.84	8	8	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	7,143.11	45	\$57,200.00	15%	50%	\$0.35	13	13	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	5,618.74	20	\$19,250.00	15%	50%	\$0.17	10	10	BEST Simulation
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	9,205.02	45	\$42,405.00	15%	50%	\$0.37	16	16	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	-12,012.33	15	\$258.50	15%	75%	\$0.00	-37	-37	BEST Simulation
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	New	0.00	14	\$225,846.50	6%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$55.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$320,760.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	639.63	15	-\$32.93	100%	at stock turnover	-\$0.02	1	1	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	815.52	15	\$260.88	100%	at stock turnover	\$0.01	169	159	EIA 2011
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	5,714.90	5	\$22,715.00	5%	15%	\$0.65	7	16	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	Existing	8,375.26	5	\$4,829.00	15%	50%	\$0.10	40	79	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	14,488.62	12	\$22,000.00	3%	25%	\$0.12	107	283	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	Existing	2,201.00	16	\$3,041.50	1%	3%	\$0.09	2	5	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	15,766.94	10	\$12,589.50	7%	45%	\$0.08	149	366	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	Existing	0.00	25	\$26,647.50	15%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$13,260.50	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	Existing	9,426.75	5	\$6,050.00	10%	25%	\$0.09	14	44	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	191.91	15	\$35.32	100%	at stock turnover	\$0.03	628	621	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	46.11	15	\$5.27	100%	at stock turnover	\$0.01	0	1	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	5,104.14	15	\$258.50	15%	75%	\$0.01	32	94	BEST Simulation
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	2,328.54	3	\$33,550.00	10%	75%	\$0.43	51	100	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	201.42	6	\$5.58	100%	at stock turnover	\$0.01	0	8	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	163.93	15	\$101.51	100%	at stock turnover	\$0.04	1,858	1,352	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	10,947.64	20	\$220,000.00	10%	25%	\$0.12	23	31	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	1,856.68	3	\$52,800.00	10%	75%	\$0.80	17	27	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	639.63	15	-\$32.93	100%	at stock turnover	-\$0.02	0	1	EIA 2011
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	815.52	15	\$260.88	100%	at stock turnover	\$0.01	86	81	EIA 2011
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	5,190.25	5	\$22,715.00	5%	15%	\$0.70	3	4	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	New	7,599.80	5	\$4,829.00	15%	50%	\$0.11	13	20	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	11,592.28	12	\$22,000.00	4%	25%	\$0.15	33	54	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	New	1,784.53	16	\$3,041.50	1%	3%	\$0.12	1	1	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	12,459.74	10	\$12,589.50	22%	45%	\$0.09	18	30	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	New	0.00	25	\$26,647.50	18%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	New	0.00	8	\$13,260.50	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	New	7,120.96	5	\$6,050.00	10%	25%	\$0.11	5	8	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	191.91	15	\$35.32	100%	at stock turnover	\$0.03	308	305	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	46.11	15	\$5.27	100%	at stock turnover	\$0.01	0	1	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	3,773.81	15	\$258.50	15%	75%	\$0.00	10	17	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	201.42	6	\$5.58	100%	at stock turnover	\$0.01	0	5	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	163.93	15	\$101.51	100%	at stock turnover	\$0.04	916	535	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	114.33	7	\$1,397.00	1%	8%	\$0.25	0	0	Developed from RTF
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	Existing	1.67	7	\$33.00	1%	3%	\$3.79	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuId=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	Existing	81.75	10	\$192.50	1%	3%	\$0.35	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	Existing	0.00	13	\$0.00	91%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	Existing	1,713.43	15	\$8,492.00	15%	75%	\$0.59	21	21	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	Existing	1,195.94	10	\$206.63	27%	at stock turnover	\$0.03	6	5	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	Existing	429.17	10	\$443.01	76%	at stock turnover	\$0.15	5	5	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	Existing	16.77	5	\$60.50	15%	75%	\$0.75	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	125.11	7	\$1,397.00	1%	4%	\$0.24	0	0	Developed from RTF
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	New	1,713.43	15	\$8,492.00	15%	75%	\$0.59	8	8	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	New	1,195.94	10	\$247.96	32%	at stock turnover	\$0.03	3	3	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	New	429.17	10	\$531.61	91%	at stock turnover	\$0.19	3	3	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	New	16.07	5	\$60.50	15%	75%	\$0.76	0	0	AEG research & analysis
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$550,000.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	2,086.44	6	\$15.66	100%	at stock turnover	\$0.00	16	17	ENERGY STAR Calculator
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	Existing	110.36	4	\$1,457.50	10%	50%	\$3.63	6	7	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	410.77	6	\$10.18	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	362.91	6	\$24.54	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	326.16	5	\$2,200.00	10%	25%	\$1.56	7	8	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	424.37	6	\$1.85	58%	at stock turnover	\$0.00	3	4	Assumed same as Desktop
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	453.15	6	\$5.79	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	1,522.58	6	\$11.42	100%	at stock turnover	\$0.00	30	31	Assumed same as Desktop
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	New	0.00	20	\$165,000.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	New	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	2,086.44	6	\$15.66	100%	at stock turnover	\$0.00	7	7	ENERGY STAR Calculator
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	New	114.43	4	\$1,457.50	10%	50%	\$3.45	2	2	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	410.77	6	\$10.18	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	362.91	6	\$24.54	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	340.02	5	\$2,200.00	10%	25%	\$1.48	2	3	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	424.37	6	\$2.03	64%	at stock turnover	\$0.00	2	2	Assumed same as Desktop
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	453.15	6	\$5.79	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	1,522.58	6	\$11.42	100%	at stock turnover	\$0.00	12	12	Assumed same as Desktop
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,629.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	Existing	1,990.02	9	\$131.82	59%	at stock turnover	\$0.01	7	6	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	Existing	1,039.00	9	\$104.50	0%	10%	\$0.02	0	0	PacifiCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$814.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$4,664.00	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$19,349.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	Existing	9,180.71	10	\$1,567.29	59%	at stock turnover	\$0.05	86	75	EIA 2011
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	New	0.00	5	\$1,545.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	New	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	New	1,990.02	9	\$171.37	77%	at stock turnover	\$0.01	4	3	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	New	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	New	1,039.00	9	\$104.50	0%	10%	\$0.02	0	0	PacifiCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	New	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	New	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	New	0.00	15	\$814.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	New	0.00	15	\$4,664.00	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	New	0.00	4	\$19,349.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	New	9,180.71	10	\$2,037.48	77%	at stock turnover	\$0.06	61	56	EIA 2011
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	0.00	10	\$8,250.00	15%	35%	\$0.00	0	0	AEG research & analysis
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	3,932.86	50	\$137,500.00	15%	25%	\$0.91	7	10	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	507.72	45	\$74,800.00	15%	35%	\$0.36	2	2	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	2,143.22	20	\$19,250.00	15%	50%	\$0.14	14	17	BEST Simulation
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	-139.80	45	\$42,405.00	15%	35%	\$0.22	-1	-1	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	3,997.89	3	\$33,550.00	10%	75%	\$0.43	47	57	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$148.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	Existing	1,038.28	15	\$12,100.00	15%	75%	\$1.24	11	14	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	Existing	9,899.74	18	\$9,350.00	15%	35%	\$0.10	37	44	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	Existing	24,268.84	20	\$12,128.56	100%	at stock turnover	\$0.05	57	58	BEST Simulation
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	Existing	28,943.78	15	\$940.50	13%	50%	\$0.00	211	234	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$320,760.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	14,948.48	20	\$220,000.00	10%	25%	\$0.12	17	17	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	New	3,077.86	3	\$52,800.00	10%	75%	\$0.80	15	15	6th Plan
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	0.00	10	\$8,250.00	15%	50%	\$0.00	0	0	AEG research & analysis
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	-972.89	15	\$258.50	15%	75%	\$0.04	-4	-4	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	2,986.63	50	\$137,500.00	15%	25%	\$1.08	2	2	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	152.65	45	\$74,800.00	15%	50%	\$1.84	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	1,653.81	20	\$19,250.00	15%	50%	\$0.17	4	4	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	133.42	45	\$42,405.00	15%	50%	\$0.37	0	0	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$55.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	New	796.11	15	\$7,150.00	15%	75%	\$0.94	4	4	6th Plan
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	New	7,683.40	18	\$9,350.00	15%	35%	\$0.12	11	12	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	New	20,270.01	20	\$11,003.11	100%	at stock turnover	\$0.06	7	7	BEST Simulation
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	New	21,973.12	15	\$940.50	19%	50%	\$0.01	51	51	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$320,760.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	21,142.43	5	\$9,900.00	3%	75%	\$0.09	146	161	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	771.88	7	\$1,397.00	1%	8%	\$0.25	0	1	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	Existing	134,043.83	20	\$1,116.50	0%	3%	\$0.00	34	34	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	25,249.00	5	\$2,200.00	1%	10%	\$0.02	23	24	AEG study for LA Dept of Water & Power

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	Existing	59,214.66	5	\$7,062.00	25%	65%	\$0.03	88	92	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	Existing	8,435.06	15	\$533.50	15%	25%	\$0.01	8	9	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	Existing	177.85	15	\$16.50	15%	75%	\$0.01	1	1	DEER
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	15,792.30	15	\$3,278.00	16%	75%	\$0.02	93	95	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	Existing	50,965.65	20	\$37,499.00	1%	30%	\$0.07	144	152	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	Existing	5,110.00	13	\$492.15	50%	at stock turnover	\$0.01	35	33	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	22,069.93	5	\$9,900.00	3%	75%	\$0.09	154	166	AEG study for PN&L
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	61,748.11	20	\$220,000.00	10%	25%	\$0.12	31	31	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	21,452.45	5	\$9,900.00	6%	75%	\$0.09	51	51	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	748.91	7	\$1,397.00	1%	4%	\$0.24	0	0	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	New	133,676.55	20	\$1,116.50	0%	3%	\$0.00	13	13	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	New	25,165.57	5	\$2,200.00	0%	75%	\$0.02	65	65	AEG study for LA Dept of Water & Power
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	New	56,653.01	5	\$7,062.00	25%	65%	\$0.03	29	29	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	New	8,406.06	15	\$533.50	15%	25%	\$0.01	3	3	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	New	178.07	15	\$16.50	15%	75%	\$0.01	0	0	DEER
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	New	15,168.72	15	\$3,278.00	1%	75%	\$0.02	38	39	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	New	49,428.78	20	\$37,499.00	1%	30%	\$0.07	49	49	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	New	5,110.00	13	\$492.15	50%	at stock turnover	\$0.01	18	18	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	20,633.42	5	\$9,900.00	6%	75%	\$0.09	48	49	AEG study for PN&L
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	99,041.10	23	\$120,463.40	8%	at stock turnover	\$0.15	118	113	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	Existing	52,524.27	23	\$17,055.84	5%	at stock turnover	\$0.03	32	33	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	34,840.74	10	\$5,430.00	15%	75%	\$0.02	26	29	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	3,905.81	15	\$14,550.00	15%	75%	\$0.36	3	3	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,291.18	15	\$5,370.00	15%	75%	\$0.39	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	7,446.93	10	\$15,000.00	15%	35%	\$0.09	29	32	AEG research & analysis
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	62,148.43	15	\$23,810.00	15%	25%	\$0.01	6	7	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	12,532.53	15	\$31,750.00	20%	65%	\$0.07	110	122	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	Existing	24,182.67	15	\$40,189.60	2%	at stock turnover	\$0.20	9	8	PacifiCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	87,345.84	23	\$99,133.86	1%	at stock turnover	\$0.17	13	13	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	18	\$140.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	Existing	49,368.46	10	\$44,080.00	18%	75%	\$0.12	208	254	DEER
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	13,498.69	50	\$250,000.00	15%	25%	\$0.98	25	32	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	13,060.86	45	\$136,000.00	15%	35%	\$0.10	50	57	BEST Simulation
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	11,546.47	45	\$104,000.00	15%	35%	\$0.23	43	50	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	7,887.29	20	\$35,000.00	15%	50%	\$0.11	53	60	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	-4,311.73	45	\$77,100.00	15%	35%	\$0.14	-16	-19	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	Existing	36,063.31	15	\$18,940.60	4%	at stock turnover	\$0.06	35	33	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	13,739.55	3	\$61,000.00	10%	75%	\$0.37	166	193	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	Existing	77,484.65	23	\$123,463.95	44%	at stock turnover	\$0.17	118	119	BEST Simulation
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$193,850.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	9,957.20	3	\$31,750.00	5%	16%	\$0.24	20	28	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,000.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	Existing	85,658.04	23	\$25,806.23	21%	at stock turnover	\$0.03	271	270	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	24,758.94	10	\$5,430.00	15%	75%	\$0.03	70	84	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	30,837.86	4	\$5,430.00	15%	75%	\$0.05	86	106	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	2,578.38	15	\$14,550.00	15%	75%	\$0.50	7	9	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,276.76	15	\$66,910.00	15%	75%	\$4.61	3	5	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$203,280.00	48%	48%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	52,216.67	20	\$400,000.00	10%	15%	\$0.13	36	36	AEG research & analysis
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	94,037.24	23	\$104,846.79	11%	at stock turnover	\$0.15	146	139	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	New	42,941.20	23	\$14,988.06	7%	at stock turnover	\$0.04	34	35	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	26,643.27	10	\$5,430.00	15%	75%	\$0.03	14	14	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	3,157.44	15	\$14,550.00	15%	75%	\$0.41	2	2	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	New	1,078.55	15	\$5,370.00	15%	75%	\$0.44	1	1	BEST Simulation
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	10,372.16	3	\$96,000.00	10%	75%	\$0.68	91	95	6th Plan
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	5,669.83	10	\$15,000.00	15%	50%	\$0.11	27	28	AEG research & analysis
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	48,839.53	15	\$23,810.00	15%	25%	\$0.01	3	4	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	9,582.05	15	\$31,750.00	20%	65%	\$0.08	59	61	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	New	24,182.67	15	\$58,605.40	3%	at stock turnover	\$0.30	9	9	PacificCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	83,094.85	23	\$86,282.38	2%	at stock turnover	\$0.15	16	16	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	914.71	18	\$130.00	15%	50%	\$0.00	4	5	BEST Simulation
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	New	36,943.97	10	\$44,080.00	18%	75%	\$0.15	41	43	DEER
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	10,125.43	50	\$250,000.00	15%	25%	\$1.30	14	14	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	965.34	45	\$136,000.00	15%	50%	\$0.18	5	5	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	8,122.65	20	\$820.00	15%	50%	\$0.01	39	40	BEST Simulation
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	8,751.47	45	\$104,000.00	15%	50%	\$0.26	41	43	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	6,008.88	20	\$35,000.00	15%	50%	\$0.13	29	30	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	-661.74	45	\$77,100.00	15%	50%	\$0.22	-3	-3	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	New	31,094.54	15	\$18,083.66	6%	at stock turnover	\$0.07	29	26	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	New	73,631.42	23	\$107,458.36	59%	at stock turnover	\$0.15	149	150	BEST Simulation
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$193,850.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$380.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	New	70,600.99	23	\$22,677.58	29%	at stock turnover	\$0.03	294	293	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	16,835.09	10	\$5,430.00	15%	75%	\$0.04	33	35	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	20,900.24	4	\$5,430.00	15%	75%	\$0.06	41	43	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	2,187.83	15	\$14,550.00	15%	75%	\$0.52	4	4	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	New	978.36	15	\$66,910.00	15%	75%	\$5.14	2	2	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$203,280.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	1,547.90	15	\$31,750.00	20%	65%	\$0.07	32	54	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	4,605.37	5	\$3,150.00	15%	25%	\$0.11	21	46	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	1,126.56	10	\$9,260.00	33%	60%	\$0.80	14	31	AEG research & analysis
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	Existing	26,642.60	10	\$14,490.00	15%	30%	\$0.06	189	392	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	859.31	15	-\$53.09	100%	at stock turnover	-\$0.02	4	7	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,095.61	15	\$420.57	100%	at stock turnover	\$0.01	1,138	1,064	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	149.26	15	\$32.96	100%	at stock turnover	\$0.03	92	91	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	35.86	15	\$4.92	100%	at stock turnover	\$0.01	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	1,516.22	3	\$61,000.00	10%	75%	\$0.37	44	77	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	172.98	6	\$5.75	100%	at stock turnover	\$0.01	0	1	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	140.79	15	\$104.62	100%	at stock turnover	\$0.05	360	264	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	1,317.94	3	\$31,750.00	5%	16%	\$0.24	7	18	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	6,677.29	20	\$400,000.00	10%	15%	\$0.13	8	10	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	1,187.43	3	\$96,000.00	10%	75%	\$0.68	18	27	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	1,219.62	15	\$31,750.00	20%	65%	\$0.08	13	19	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	3,609.53	5	\$3,150.00	15%	25%	\$0.13	9	13	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	935.05	10	\$9,260.00	44%	60%	\$0.90	4	5	AEG research & analysis
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	New	21,035.84	10	\$14,490.00	15%	30%	\$0.07	77	111	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	859.31	15	-\$53.09	100%	at stock turnover	-\$0.02	3	5	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,095.61	15	\$420.57	100%	at stock turnover	\$0.01	734	686	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	149.26	15	\$32.96	100%	at stock turnover	\$0.03	59	59	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	35.86	15	\$4.92	100%	at stock turnover	\$0.01	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	172.98	6	\$5.75	100%	at stock turnover	\$0.01	0	1	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	140.79	15	\$104.62	100%	at stock turnover	\$0.04	241	140	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	20,908.46	15	\$82.47	15%	at stock turnover	\$0.00	20	20	Illinois TRM
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	2,130.92	10	\$169.98	30%	at stock turnover	\$0.01	14	12	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	3,612.56	18	\$371.75	15%	at stock turnover	\$0.01	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	3,836.65	10	\$753.64	59%	at stock turnover	\$0.03	33	29	Developed from RTF "ComCookingConvectionOven" v2.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	20,908.46	15	\$115.46	22%	at stock turnover	\$0.00	20	20	Illinois TRM
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	2,130.92	10	\$237.97	42%	at stock turnover	\$0.02	12	11	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	3,612.56	18	\$520.45	22%	at stock turnover	\$0.02	2	2	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	3,836.65	10	\$1,055.10	82%	at stock turnover	\$0.04	28	25	Developed from RTF "ComCookingConvectionOven" v2.0
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	28,882.89	23	\$181,855.16	8%	at stock turnover	\$0.15	34	32	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	15,537.50	10	\$15,000.00	15%	35%	\$0.09	30	31	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	206,959.04	15	\$23,810.00	15%	25%	\$0.01	86	86	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	26,156.86	15	\$31,750.00	20%	65%	\$0.07	116	118	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	33,104.68	23	\$194,234.80	1%	at stock turnover	\$0.17	5	5	BEST Simulation
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	18	\$140.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	103,308.53	45	\$136,000.00	15%	35%	\$0.10	202	207	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	24,999.82	45	\$104,000.00	15%	35%	\$0.23	47	50	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	19,789.16	20	\$35,000.00	15%	50%	\$0.11	67	69	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	49,882.39	45	\$77,100.00	15%	35%	\$0.14	95	100	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	29,754.11	3	\$61,000.00	10%	75%	\$0.37	182	194	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	14	\$191,010.00	3%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	21,555.16	3	\$31,750.00	5%	16%	\$0.24	22	25	BEST Simulation
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,000.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$203,280.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	127,855.16	20	\$400,000.00	10%	15%	\$0.13	31	31	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	26,216.57	23	\$165,677.10	11%	at stock turnover	\$0.15	38	36	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	25,801.68	3	\$96,000.00	10%	75%	\$0.68	81	82	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	13,904.94	10	\$15,000.00	15%	50%	\$0.11	24	24	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	205,976.12	15	\$23,810.00	15%	25%	\$0.01	39	39	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	23,501.06	15	\$31,750.00	20%	65%	\$0.08	52	52	BEST Simulation
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	31,012.56	23	\$169,054.80	2%	at stock turnover	\$0.15	5	5	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	5,955.56	18	\$130.00	15%	50%	\$0.00	10	10	BEST Simulation
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	62,988.12	45	\$136,000.00	15%	50%	\$0.18	107	108	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	4,530.87	20	\$820.00	15%	50%	\$0.01	8	8	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	21,735.01	45	\$104,000.00	15%	50%	\$0.26	37	37	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	17,959.44	20	\$35,000.00	15%	50%	\$0.13	31	31	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	28,715.61	45	\$77,100.00	15%	50%	\$0.22	49	49	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	New	0.00	14	\$191,010.00	6%	75%	\$10.00	0	0	DEER
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$380.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$203,280.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	4,129.50	15	\$31,750.00	20%	65%	\$0.07	87	145	BEST Simulation
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	691.30	15	-\$42.71	100%	at stock turnover	-\$0.02	2	4	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	881.39	15	\$338.34	100%	at stock turnover	\$0.01	607	568	EIA 2011
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	23,389.77	5	\$68,660.00	5%	15%	\$0.47	36	77	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	Existing	37,346.92	5	\$4,720.00	15%	50%	\$0.02	221	409	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	24,569.41	12	\$40,000.00	3%	25%	\$0.15	247	529	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	3,718.97	16	\$2,970.00	1%	3%	\$0.06	3	8	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	26,615.54	10	\$12,310.00	7%	45%	\$0.05	340	682	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	25	\$123,000.00	15%	25%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Lighting - Timelocks and Timers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$13,550.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	4,553.19	5	\$11,000.00	10%	25%	\$0.31	8	25	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	228.57	15	\$50.48	100%	at stock turnover	\$0.03	3,079	3,042	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	54.92	15	\$7.53	100%	at stock turnover	\$0.01	0	4	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	3,918.72	3	\$61,000.00	10%	75%	\$0.37	116	199	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	229.59	6	\$7.63	100%	at stock turnover	\$0.01	0	5	EIA 2011
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	186.86	15	\$138.85	100%	at stock turnover	\$0.05	1,127	825	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,411.50	3	\$31,750.00	5%	16%	\$0.24	17	46	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	20,274.52	20	\$400,000.00	10%	15%	\$0.13	23	31	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	3,446.07	3	\$96,000.00	10%	75%	\$0.68	51	78	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	3,669.99	15	\$31,750.00	20%	65%	\$0.08	38	58	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	691.30	15	-\$42.71	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	881.39	15	\$338.34	100%	at stock turnover	\$0.01	392	366	EIA 2011
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	21,414.25	5	\$68,660.00	5%	15%	\$0.51	16	25	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	New	32,884.60	5	\$4,720.00	15%	50%	\$0.03	90	136	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	21,633.58	12	\$40,000.00	4%	25%	\$0.16	102	155	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	New	3,304.78	16	\$2,970.00	1%	3%	\$0.07	2	2	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	22,966.18	10	\$12,310.00	22%	45%	\$0.05	56	85	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	New	0.00	25	\$123,000.00	18%	25%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$13,550.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	New	3,593.16	5	\$11,000.00	10%	25%	\$0.38	4	6	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	228.57	15	\$50.48	100%	at stock turnover	\$0.03	1,981	1,961	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	54.92	15	\$7.53	100%	at stock turnover	\$0.01	0	2	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	229.59	6	\$7.63	100%	at stock turnover	\$0.01	0	4	EIA 2011
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	186.86	15	\$138.85	100%	at stock turnover	\$0.04	754	438	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	776.48	7	\$9,320.00	1%	8%	\$0.18	2	2	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	Existing	11.32	7	\$200.00	1%	3%	\$3.38	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	Existing	552.84	10	\$1,300.00	1%	3%	\$0.35	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	Existing	2,640.53	15	\$13,950.00	15%	75%	\$0.63	25	25	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	1,387.62	10	\$8.88	1%	at stock turnover	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	Existing	497.96	10	\$27.05	4%	at stock turnover	\$0.01	0	0	Hawaii TRM
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	Existing	19.39	5	\$400.00	15%	75%	\$4.28	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	2,153.31	3	\$31,750.00	5%	16%	\$0.24	12	11	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	895.93	7	\$9,320.00	1%	4%	\$0.17	0	0	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	New	13.12	7	\$10.00	1%	3%	\$0.15	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	New	0.00	13	\$0.00	72%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	New	2,650.73	15	\$13,950.00	15%	75%	\$0.63	13	13	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	1,387.62	10	\$10.26	1%	at stock turnover	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	New	497.96	10	\$31.25	5%	at stock turnover	\$0.01	0	0	Hawaii TRM
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	New	18.63	5	\$400.00	15%	75%	\$4.31	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	8,117.34	6	\$60.91	100%	at stock turnover	\$0.00	72	76	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	Existing	601.58	4	\$2,650.00	10%	50%	\$1.21	36	40	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,598.12	6	\$39.61	100%	at stock turnover	\$0.01	14	15	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,411.91	6	\$95.46	100%	at stock turnover	\$0.01	5	5	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	1,785.06	5	\$4,000.00	10%	25%	\$0.52	40	44	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,651.03	6	\$3.47	28%	at stock turnover	\$0.00	8	8	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,763.00	6	\$22.54	100%	at stock turnover	\$0.00	4	4	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	5,923.63	6	\$29.34	66%	at stock turnover	\$0.00	110	113	Assumed same as Desktop
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	8,117.34	6	\$60.91	100%	at stock turnover	\$0.00	43	43	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	New	669.08	4	\$2,650.00	10%	50%	\$1.07	18	19	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,598.12	6	\$39.61	100%	at stock turnover	\$0.01	9	9	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,411.91	6	\$95.46	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	2,003.03	5	\$4,000.00	10%	25%	\$0.46	20	22	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,651.03	6	\$4.16	34%	at stock turnover	\$0.00	5	5	Assumed same as Desktop
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,763.00	6	\$22.54	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	5,923.63	6	\$36.67	83%	at stock turnover	\$0.00	64	63	Assumed same as Desktop
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$17,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	Existing	3,377.08	9	\$82.04	22%	at stock turnover	\$0.00	19	17	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	Existing	6,926.67	9	\$690.00	0%	10%	\$0.02	3	3	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$5,430.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$31,100.00	0%	0%	\$10.00	0	0	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$12,260.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	Existing	15,579.69	10	\$975.37	22%	at stock turnover	\$0.02	63	55	EIA 2011
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$10,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	New	3,377.08	9	\$114.85	30%	at stock turnover	\$0.01	16	14	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	New	6,926.67	9	\$690.00	0%	10%	\$0.02	2	2	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$5,430.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$31,100.00	0%	0%	\$10.00	0	0	AEO 2013
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$12,260.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	New	15,579.69	10	\$1,365.52	30%	at stock turnover	\$0.03	63	58	EIA 2011
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	4,139.53	15	\$31,750.00	20%	65%	\$0.07	40	49	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	18	\$140.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	4,740.05	50	\$250,000.00	15%	25%	\$0.98	10	14	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	740.88	45	\$136,000.00	15%	35%	\$0.10	3	4	BEST Simulation
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	2,622.50	20	\$35,000.00	15%	50%	\$0.11	20	24	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	-169.00	45	\$77,100.00	15%	35%	\$0.14	-1	-1	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	4,817.57	3	\$61,000.00	10%	75%	\$0.37	66	82	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,489.93	3	\$31,750.00	5%	16%	\$0.24	8	12	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,000.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	Existing	1,251.41	15	\$22,000.00	15%	25%	\$1.91	3	3	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	Existing	11,909.53	18	\$17,000.00	15%	35%	\$0.15	51	62	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	Existing	44,065.27	20	\$43,604.78	100%	at stock turnover	\$0.10	117	119	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	Existing	33,777.29	15	\$7,300.00	13%	25%	\$0.03	87	103	BEST Simulation
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$203,280.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	15,320.75	20	\$400,000.00	10%	15%	\$0.13	9	9	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	3,206.32	3	\$96,000.00	10%	75%	\$0.68	24	24	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	2,793.56	15	\$31,750.00	20%	65%	\$0.08	15	15	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	611.87	18	\$130.00	15%	50%	\$0.00	2	3	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	3,129.48	50	\$250,000.00	15%	25%	\$1.30	4	4	6th Plan
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	52.31	45	\$136,000.00	15%	50%	\$0.18	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	888.39	20	\$820.00	15%	50%	\$0.01	4	4	BEST Simulation
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	1,763.10	20	\$35,000.00	15%	50%	\$0.13	7	7	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	138.99	45	\$77,100.00	15%	50%	\$0.22	1	1	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$380.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	New	826.26	15	\$13,000.00	15%	25%	\$1.67	1	1	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	New	7,949.19	18	\$17,000.00	15%	35%	\$0.22	18	19	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	New	43,213.34	20	\$41,033.51	100%	at stock turnover	\$0.10	46	47	BEST Simulation
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	New	22,658.03	15	\$7,300.00	19%	25%	\$0.04	15	15	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$203,280.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	12,996.00	5	\$18,000.00	3%	75%	\$0.24	91	150	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	7,280.44	7	\$9,320.00	1%	8%	\$0.18	5	8	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	Existing	81,722.74	20	\$7,450.00	0%	1%	\$0.01	8	12	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	14,454.35	5	\$4,000.00	1%	10%	\$0.05	13	21	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	Existing	37,352.42	5	\$2,210.00	25%	65%	\$0.01	57	89	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	Existing	4,827.20	15	\$940.00	15%	25%	\$0.02	5	7	Hawaii TRM
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	Existing	404.24	15	\$30.00	15%	75%	\$0.01	2	4	DEER
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	9,044.58	15	\$11,410.00	16%	75%	\$0.12	54	83	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	Existing	31,207.36	20	\$83,330.00	1%	30%	\$0.22	90	142	BEST Simulation
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	Existing	126,004.61	14	\$21,573.61	53%	at stock turnover	\$0.02	1,189	1,144	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	13,541.51	5	\$18,000.00	3%	75%	\$0.24	96	155	AEG study for PN&L
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	40,068.07	20	\$400,000.00	10%	15%	\$0.13	9	11	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	11,898.29	5	\$18,000.00	6%	75%	\$0.24	36	51	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	6,662.13	7	\$9,320.00	1%	4%	\$0.17	1	1	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	New	76,897.74	20	\$7,450.00	0%	1%	\$0.01	4	6	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	13,779.62	5	\$4,000.00	0%	75%	\$0.05	45	64	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	New	35,146.99	5	\$2,210.00	25%	65%	\$0.01	23	33	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	New	4,601.60	15	\$940.00	15%	25%	\$0.02	2	3	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	New	383.54	15	\$30.00	15%	75%	\$0.01	1	1	DEER
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	8,308.61	15	\$11,410.00	1%	75%	\$0.12	27	38	BEST Simulation
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	New	28,462.59	20	\$83,330.00	1%	30%	\$0.22	36	51	BEST Simulation
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	New	126,004.61	14	\$21,573.61	53%	at stock turnover	\$0.02	814	789	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	12,364.18	5	\$18,000.00	6%	75%	\$0.24	37	53	AEG study for PN&L
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	8,796.08	23	\$5,686.54	7%	at stock turnover	\$0.23	11	9	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	Existing	4,743.69	23	\$1,083.63	0%	at stock turnover	\$0.02	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	3,391.71	10	\$814.55	15%	75%	\$0.03	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	145.92	15	\$526.35	15%	75%	\$0.34	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	Existing	88.89	15	\$806.85	15%	75%	\$0.84	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	Existing	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	667.08	10	\$825.00	15%	35%	\$0.09	7	7	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	5,425.85	15	\$3,571.70	15%	75%	\$0.03	0	0	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,122.69	15	\$1,746.25	20%	65%	\$0.06	26	28	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	Existing	2,152.16	15	\$12,919.44	7%	at stock turnover	\$0.74	7	6	PacifiCorp Program Data
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	7,758.26	23	\$4,679.63	3%	at stock turnover	\$0.22	6	6	BEST Simulation
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	0.00	18	\$21.45	15%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	Existing	4,572.47	10	\$6,626.40	18%	75%	\$0.20	51	61	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	2,235.70	15	\$260.15	15%	75%	\$0.66	40	47	BEST Simulation
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	1,188.58	50	\$13,750.00	15%	25%	\$0.55	6	7	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	268.58	45	\$7,480.00	15%	35%	\$0.15	3	3	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	1,011.24	45	\$5,720.00	15%	35%	\$0.22	10	11	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	709.71	20	\$1,925.00	15%	50%	\$0.10	13	14	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	-377.62	45	\$4,240.50	15%	35%	\$0.20	-4	-4	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	Existing	3,209.49	15	\$1,685.64	0%	at stock turnover	\$0.06	0	0	BEST Simulation
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	1,208.39	3	\$3,355.00	10%	75%	\$0.29	38	44	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	Existing	6,895.79	23	\$5,834.52	77%	at stock turnover	\$0.09	44	44	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$29,137.35	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$150.70	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	Existing	7,182.66	23	\$1,639.57	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$526.35	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$2,420.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$40,295.20	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	4,921.99	20	\$22,000.00	10%	25%	\$0.08	14	14	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	8,357.11	23	\$5,210.87	8%	at stock turnover	\$0.22	7	6	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	New	4,568.76	23	\$1,038.63	0%	at stock turnover	\$0.02	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	3,013.82	10	\$814.55	15%	75%	\$0.04	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	133.97	15	\$526.35	15%	75%	\$0.33	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$806.85	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	New	916.00	3	\$5,280.00	10%	75%	\$0.52	11	11	6th Plan
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	New	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	519.87	10	\$825.00	15%	50%	\$0.10	3	3	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	4,268.86	15	\$3,571.70	15%	75%	\$0.03	0	0	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	New	891.28	15	\$1,746.25	20%	65%	\$0.06	7	8	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	New	2,152.16	15	\$16,758.88	8%	at stock turnover	\$0.96	4	3	PacifiCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	7,370.98	23	\$4,288.18	4%	at stock turnover	\$0.20	4	4	BEST Simulation
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	19.42	18	\$20.35	15%	35%	\$0.03	0	0	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	New	3,443.87	10	\$6,626.40	18%	75%	\$0.25	5	5	DEER
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	1,881.79	15	\$260.15	15%	75%	\$0.16	21	21	BEST Simulation
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	894.20	50	\$13,750.00	15%	25%	\$0.71	2	2	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	9.15	45	\$7,480.00	15%	50%	\$0.50	0	0	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	264.89	20	\$45.10	15%	50%	\$0.04	2	2	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	820.23	45	\$5,720.00	15%	50%	\$0.24	5	5	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	550.95	20	\$1,925.00	15%	50%	\$0.11	4	4	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	-57.73	45	\$4,240.50	15%	50%	\$0.26	0	0	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	New	2,767.29	15	\$1,609.37	0%	at stock turnover	\$0.07	0	0	BEST Simulation
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	New	6,551.54	23	\$5,346.47	93%	at stock turnover	\$0.08	28	28	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$29,137.35	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$57.75	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	New	6,922.85	23	\$1,571.50	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$526.35	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$2,420.55	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$40,295.20	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	178.19	15	\$1,746.25	20%	65%	\$0.06	9	14	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	479.70	5	\$1,257.30	15%	25%	\$0.44	5	11	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	247.53	10	\$979.00	33%	60%	\$0.41	7	15	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	Existing	2,826.21	10	\$1,532.85	15%	30%	\$0.06	48	93	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	841.81	15	-\$27.09	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,073.29	15	\$214.59	100%	at stock turnover	\$0.01	273	256	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	165.50	15	\$34.83	100%	at stock turnover	\$0.03	85	82	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	37.74	15	\$2.70	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	163.91	3	\$3,355.00	10%	75%	\$0.29	12	19	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	144.11	6	\$2.49	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	117.29	15	\$45.39	100%	at stock turnover	\$0.03	42	30	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
			Restaurant bldg.										
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	768.90	20	\$22,000.00	10%	25%	\$0.08	4	5	AEG research & analysis
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	132.75	3	\$5,280.00	10%	75%	\$0.52	3	4	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	150.06	15	\$1,746.25	20%	65%	\$0.06	2	3	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	401.87	5	\$1,257.30	15%	25%	\$0.48	1	2	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	334.40	10	\$979.00	44%	60%	\$0.28	2	3	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	New	2,368.34	10	\$1,532.85	15%	30%	\$0.07	12	18	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	841.81	15	-\$27.09	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,073.29	15	\$214.59	100%	at stock turnover	\$0.01	113	106	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	165.50	15	\$34.83	100%	at stock turnover	\$0.03	34	32	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	37.74	15	\$2.70	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	144.11	6	\$2.49	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	117.29	15	\$45.39	100%	at stock turnover	\$0.02	16	10	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	38,284.72	15	\$514.59	53%	at stock turnover	\$0.00	286	280	Illinois TRM
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	7,803.69	10	\$185.29	9%	at stock turnover	\$0.00	34	30	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	6,614.82	18	\$2,319.58	53%	at stock turnover	\$0.04	38	38	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	14,050.30	10	\$712.24	15%	at stock turnover	\$0.01	71	62	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	38,284.72	15	\$979.99	100%	at stock turnover	\$0.00	243	234	Illinois TRM
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	7,803.69	10	\$352.86	17%	at stock turnover	\$0.01	24	22	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	6,614.82	18	\$4,417.43	100%	at stock turnover	\$0.07	28	27	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	14,050.30	10	\$1,356.40	29%	at stock turnover	\$0.01	50	46	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	985.51	23	\$20,758.24	7%	at stock turnover	\$0.23	1	1	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	685.82	10	\$825.00	15%	35%	\$0.09	3	3	AEG research & analysis
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	9,637.75	15	\$3,571.70	15%	75%	\$0.03	4	4	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,154.55	15	\$1,746.25	20%	65%	\$0.06	11	11	BEST Simulation
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	1,689.43	23	\$20,149.64	3%	at stock turnover	\$0.22	1	1	BEST Simulation
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	0.00	18	\$21.45	15%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	-2,001.55	15	\$260.15	15%	75%	\$0.67	-15	-16	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	3,875.82	45	\$7,480.00	15%	35%	\$0.15	16	17	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	1,128.02	45	\$5,720.00	15%	35%	\$0.22	5	5	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	889.20	20	\$1,925.00	15%	50%	\$0.10	7	7	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	2,250.86	45	\$4,240.50	15%	35%	\$0.20	9	10	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	1,347.67	3	\$3,355.00	10%	75%	\$0.29	18	19	6th Plan
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	Existing	0.00	14	\$43,238.25	3%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$150.70	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$40,295.20	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	6,183.42	20	\$22,000.00	10%	25%	\$0.08	6	6	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	1,171.49	23	\$19,910.85	8%	at stock turnover	\$0.22	1	1	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	New	1,274.25	3	\$5,280.00	10%	75%	\$0.52	5	5	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	653.04	10	\$825.00	15%	50%	\$0.10	1	1	AEG research & analysis
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	9,646.57	15	\$3,571.70	15%	75%	\$0.03	1	1	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	New	1,119.73	15	\$1,746.25	20%	65%	\$0.06	3	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	2,080.81	23	\$18,464.14	4%	at stock turnover	\$0.20	1	1	BEST Simulation
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	-167.05	18	\$20.35	15%	35%	\$0.03	0	0	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	-1,635.94	15	\$260.15	15%	75%	\$0.16	-6	-6	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	1,241.34	45	\$7,480.00	15%	50%	\$0.50	3	3	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	-160.88	20	\$45.10	15%	50%	\$0.04	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	1,102.48	45	\$5,720.00	15%	50%	\$0.24	2	2	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	843.45	20	\$1,925.00	15%	50%	\$0.11	2	2	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	1,420.65	45	\$4,240.50	15%	50%	\$0.26	3	3	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	New	0.00	14	\$43,238.25	6%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$57.75	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$40,295.20	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	421.70	15	\$1,746.25	20%	65%	\$0.06	20	34	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	502.42	15	-\$16.17	100%	at stock turnover	-\$0.01	0	1	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	640.58	15	\$128.07	100%	at stock turnover	\$0.01	91	85	EIA 2011
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	2,128.41	5	\$7,425.55	5%	15%	\$0.55	7	16	Illinois TRM
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	Existing	3,380.10	5	\$551.65	15%	50%	\$0.03	45	86	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	2,339.30	12	\$2,200.00	3%	25%	\$0.08	52	118	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	Existing	351.12	16	\$347.60	1%	3%	\$0.07	1	2	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	2,509.07	10	\$1,438.80	7%	45%	\$0.06	70	151	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	Existing	0.00	25	\$6,765.00	15%	25%	\$10.00	0	0	DEER

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Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$1,559.25	7%	15%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	Existing	612.25	5	\$605.00	10%	25%	\$0.13	2	8	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	215.33	15	\$45.32	100%	at stock turnover	\$0.03	656	633	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	49.10	15	\$3.51	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	374.56	3	\$3,355.00	10%	75%	\$0.29	24	44	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	212.76	6	\$3.68	100%	at stock turnover	\$0.00	0	1	EIA 2011
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	173.16	15	\$67.02	100%	at stock turnover	\$0.03	330	240	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	1,825.02	20	\$22,000.00	10%	25%	\$0.08	9	12	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	309.30	3	\$5,280.00	10%	75%	\$0.52	6	10	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	344.27	15	\$1,746.25	20%	65%	\$0.06	5	8	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	502.42	15	-\$16.17	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	640.58	15	\$128.07	100%	at stock turnover	\$0.01	37	35	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	1,786.58	5	\$7,425.55	5%	15%	\$0.61	2	3	Illinois TRM
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	New	2,819.77	5	\$551.65	15%	50%	\$0.03	11	16	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	1,930.44	12	\$2,200.00	4%	25%	\$0.09	13	19	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	New	289.72	16	\$347.60	1%	3%	\$0.08	0	0	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	2,037.79	10	\$1,438.80	22%	45%	\$0.07	7	11	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	New	0.00	25	\$6,765.00	18%	25%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$1,559.25	7%	15%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	New	449.48	5	\$605.00	10%	25%	\$0.17	1	1	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	215.33	15	\$45.32	100%	at stock turnover	\$0.03	259	250	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	49.10	15	\$3.51	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	212.76	6	\$3.68	100%	at stock turnover	\$0.00	0	1	EIA 2011

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Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	173.16	15	\$67.02	100%	at stock turnover	\$0.02	130	76	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	16.89	7	\$1,397.55	1%	4%	\$0.27	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	Existing	0.25	7	\$30.80	1%	3%	\$23.92	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	Existing	12.08	10	\$194.70	1%	3%	\$2.41	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	Existing	0.00	13	\$0.00	20%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	Existing	440.87	15	\$16,305.30	15%	75%	\$4.43	3	3	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	76.32	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	Existing	13.69	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

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Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	16.93	7	\$1,397.55	1%	2%	\$0.27	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	New	0.25	7	\$1.65	1%	3%	\$1.28	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	New	440.87	15	\$16,305.30	15%	75%	\$4.43	1	1	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	New	76.32	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	New	13.69	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$55,000.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	485.04	6	\$3.64	100%	at stock turnover	\$0.00	10	10	ENERGY STAR Calculator
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	Existing	2.15	4	\$145.75	10%	50%	\$18.62	0	0	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	76.39	6	\$1.89	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	84.37	6	\$5.70	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	6.31	5	\$220.00	10%	25%	\$8.02	0	0	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	197.31	6	\$1.48	100%	at stock turnover	\$0.00	7	8	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	210.69	6	\$2.69	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	707.92	6	\$2.66	50%	at stock turnover	\$0.00	27	27	Assumed same as Desktop
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,500.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	485.04	6	\$3.64	100%	at stock turnover	\$0.00	4	4	ENERGY STAR Calculator
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	New	2.05	4	\$145.75	10%	50%	\$19.40	0	0	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	76.39	6	\$1.89	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	84.37	6	\$5.70	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	6.02	5	\$220.00	10%	25%	\$8.36	0	0	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	197.31	6	\$1.48	100%	at stock turnover	\$0.00	3	3	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	210.69	6	\$2.69	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	707.92	6	\$2.92	55%	at stock turnover	\$0.00	8	8	Assumed same as Desktop
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,631.20	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	Existing	1,633.13	9	\$178.71	97%	at stock turnover	\$0.02	24	22	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	Existing	661.41	8	\$2,542.65	0%	75%	\$0.61	1	2	Developed from RTF
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	Existing	1,039.00	9	\$102.85	0%	75%	\$0.02	3	3	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	Existing	1,019.54	15	\$815.10	0%	75%	\$0.09	125	135	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	Existing	1,996.08	15	\$4,665.10	0%	75%	\$0.26	242	266	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	Existing	1,803.76	4	\$2,431.00	0%	75%	\$0.36	58	61	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	Existing	3,767.11	10	\$1,062.38	97%	at stock turnover	\$0.08	161	141	EIA 2011
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$1,547.15	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	New	1,633.13	9	\$183.67	100%	at stock turnover	\$0.02	9	8	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	New	667.05	8	\$2,542.65	0%	75%	\$0.61	0	0	Developed from RTF
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	New	1,039.00	9	\$102.85	0%	75%	\$0.02	1	1	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	New	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	New	995.51	15	\$815.10	0%	75%	\$0.09	36	36	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	New	1,951.93	15	\$4,665.10	0%	75%	\$0.27	70	71	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	New	1,812.96	4	\$2,431.00	0%	75%	\$0.36	17	17	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	New	3,767.11	10	\$1,091.86	100%	at stock turnover	\$0.08	63	59	EIA 2011
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$825.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	541.50	15	\$1,746.25	20%	65%	\$0.06	13	15	BEST Simulation
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	0.00	18	\$21.45	15%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	-173.20	15	\$260.15	15%	75%	\$0.64	-3	-4	BEST Simulation
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	624.62	50	\$13,750.00	15%	25%	\$0.56	3	4	6th Plan
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	0.00	45	\$7,480.00	15%	35%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	339.03	20	\$1,925.00	15%	50%	\$0.10	6	7	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	-22.19	45	\$4,240.50	15%	35%	\$0.20	0	0	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	635.01	3	\$3,355.00	10%	75%	\$0.29	21	25	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$150.70	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	Existing	164.90	15	\$1,210.00	15%	25%	\$0.78	1	1	6th Plan
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	Existing	1,566.12	18	\$935.00	15%	35%	\$0.06	16	19	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	Existing	3,437.18	20	\$5,817.10	100%	at stock turnover	\$0.18	28	29	BEST Simulation
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	Existing	3,903.17	15	\$1,651.10	13%	50%	\$0.05	78	85	BEST Simulation
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$40,295.20	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	2,321.89	20	\$22,000.00	10%	25%	\$0.08	6	6	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	New	490.12	3	\$5,280.00	10%	75%	\$0.52	5	5	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$825.00	15%	50%	\$0.00	0	0	AEG research & analysis
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	New	455.60	15	\$1,746.25	20%	65%	\$0.06	3	3	BEST Simulation
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	232.57	18	\$20.35	15%	35%	\$0.03	1	1	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	-148.95	15	\$260.15	15%	75%	\$0.16	-1	-1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	477.93	50	\$13,750.00	15%	25%	\$0.71	1	1	6th Plan
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	0.00	45	\$7,480.00	15%	50%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	0.39	20	\$45.10	15%	50%	\$0.04	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	261.59	20	\$1,925.00	15%	50%	\$0.11	1	2	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	21.25	45	\$4,240.50	15%	50%	\$0.26	0	0	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$57.75	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	New	126.78	15	\$715.00	15%	25%	\$0.58	0	0	6th Plan
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	New	1,232.82	18	\$935.00	15%	35%	\$0.08	4	4	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	New	3,016.49	20	\$5,609.95	100%	at stock turnover	\$0.19	6	6	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	New	2,876.38	15	\$1,651.10	19%	50%	\$0.07	14	15	BEST Simulation
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$40,295.20	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,114.78	5	\$990.00	3%	75%	\$0.07	74	77	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	806.16	7	\$1,397.55	1%	4%	\$0.27	1	1	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	Existing	18,194.69	20	\$1,117.60	0%	3%	\$0.01	18	18	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,429.17	5	\$220.00	1%	10%	\$0.02	11	11	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	Existing	8,222.99	5	\$551.65	25%	65%	\$0.02	41	42	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$262.90	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	Existing	17.88	15	\$1.65	15%	75%	\$0.01	0	0	DEER
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	2,003.63	15	\$1,036.20	16%	75%	\$0.06	39	40	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	Existing	6,347.54	20	\$25,000.25	1%	30%	\$0.34	58	65	BEST Simulation
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	Existing	694.62	13	\$38.64	58%	at stock turnover	\$0.01	16	15	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	2,983.02	5	\$990.00	3%	75%	\$0.07	69	75	AEG study for PN&L
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	8,688.52	20	\$22,000.00	10%	25%	\$0.08	13	13	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,019.09	5	\$990.00	6%	75%	\$0.07	20	20	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	780.24	7	\$1,397.55	1%	2%	\$0.27	0	0	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	New	18,145.21	20	\$1,117.60	0%	4%	\$0.01	6	6	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,232.89	5	\$220.00	0%	75%	\$0.02	23	24	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	New	8,235.94	5	\$551.65	25%	65%	\$0.02	12	12	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$262.90	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	New	17.90	15	\$1.65	15%	75%	\$0.01	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	1,949.83	15	\$1,036.20	1%	75%	\$0.06	14	14	BEST Simulation
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	New	6,117.55	20	\$25,000.25	1%	30%	\$0.34	17	17	BEST Simulation
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	New	694.62	13	\$38.64	61%	at stock turnover	\$0.01	7	7	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	2,903.57	5	\$990.00	6%	75%	\$0.07	19	20	AEG study for PN&L
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	13,520.80	23	\$122,347.89	5%	at stock turnover	\$0.14	9	8	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft School bldg.	Existing	12,209.67	23	\$19,027.90	39%	at stock turnover	\$0.16	69	70	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	7,297.00	10	\$813.00	15%	75%	\$0.02	67	76	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	1,903.86	15	\$1,167.00	15%	75%	\$0.07	17	20	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	Existing	409.73	15	\$3,510.00	15%	75%	\$0.80	3	5	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	6,036.15	15	\$23,400.00	45%	85%	\$1.22	64	76	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Destratification Fans (HVLS)	per 30,000 sqft School bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	1,333.73	10	\$4,500.00	15%	35%	\$0.14	8	10	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	Existing	2,244.43	15	\$9,525.00	20%	65%	\$0.11	32	36	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	Existing	3,302.36	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	11,918.34	23	\$100,585.39	4%	at stock turnover	\$0.12	3	3	BEST Simulation
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	1,132.28	18	\$93.00	15%	50%	\$0.02	13	15	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	Existing	9,128.55	10	\$28,842.00	18%	75%	\$0.41	70	85	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	2,343.08	50	\$75,000.00	15%	25%	\$1.58	7	9	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	922.26	45	\$40,800.00	15%	35%	\$0.39	6	7	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	3,666.63	20	\$246.00	15%	35%	\$0.01	24	26	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	2,210.15	45	\$31,200.00	15%	35%	\$0.34	14	16	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	1,419.01	20	\$10,500.00	15%	50%	\$0.17	16	18	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	-825.31	45	\$23,130.00	15%	35%	\$0.20	-5	-6	BEST Simulation
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	Existing	4,924.89	15	\$20,358.71	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	Existing	2,440.68	3	\$18,300.00	10%	75%	\$0.56	49	57	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	Existing	4,445.45	23	\$24,140.71	26%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	Existing	0.00	15	\$126,822.00	15%	75%	\$10.00	0	0	DEER
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	1,905.86	3	\$9,525.00	2%	22%	\$0.36	12	16	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	Existing	23,162.81	23	\$28,790.04	10%	at stock turnover	\$0.13	4	4	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	6,134.94	10	\$813.00	15%	75%	\$0.02	13	17	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	Existing	8,423.58	4	\$813.00	15%	75%	\$0.02	18	23	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	2,605.92	15	\$1,167.00	15%	75%	\$0.04	5	7	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	Existing	434.36	15	\$5,367.00	15%	75%	\$1.08	1	1	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$85,893.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	7,520.27	20	\$120,000.00	10%	25%	\$0.21	6	6	AEG research & analysis
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	12,211.00	23	\$125,335.53	6%	at stock turnover	\$0.16	3	2	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft School bldg.	New	7,513.85	23	\$16,421.65	41%	at stock turnover	\$0.23	17	17	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	4,608.88	10	\$813.00	15%	75%	\$0.02	7	7	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	1,767.76	15	\$1,167.00	15%	75%	\$0.07	3	3	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	New	234.43	15	\$3,510.00	15%	75%	\$1.26	0	0	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	New	1,463.52	3	\$28,800.00	10%	75%	\$1.04	5	5	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	1,160.05	15	\$23,400.00	45%	85%	\$11.27	2	2	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Cooling	Destratification Fans (HVLS)	per 30,000 sqft School bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	816.57	10	\$4,500.00	15%	50%	\$0.16	2	2	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	New	1,380.01	15	\$9,525.00	20%	65%	\$0.13	3	3	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	New	3,302.36	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	10,767.90	23	\$103,041.60	5%	at stock turnover	\$0.14	2	2	BEST Simulation
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	512.97	18	\$93.00	15%	35%	\$1.63	1	1	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	New	5,370.10	10	\$28,842.00	18%	75%	\$0.66	2	3	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	1,424.71	50	\$75,000.00	15%	25%	\$2.59	1	1	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	-202.97	45	\$40,800.00	15%	50%	\$1.24	0	0	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	2,036.50	20	\$246.00	15%	50%	\$0.03	4	4	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	1,325.02	45	\$31,200.00	15%	50%	\$0.40	2	3	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	865.40	20	\$10,500.00	15%	50%	\$0.20	2	2	BEST Simulation
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	-100.19	45	\$23,130.00	15%	50%	\$0.30	0	0	BEST Simulation
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	New	4,274.98	15	\$21,089.91	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	New	4,016.62	23	\$24,730.20	29%	at stock turnover	\$0.00	0	0	BEST Simulation

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School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	New	0.00	15	\$126,822.00	15%	75%	\$10.00	0	0	DEER
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	New	1,135.17	3	\$9,525.00	2%	22%	\$0.43	2	2	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	New	16,033.18	23	\$24,846.67	10%	at stock turnover	\$0.16	1	1	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	3,213.17	10	\$813.00	15%	75%	\$0.04	1	1	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	New	4,528.74	4	\$813.00	15%	75%	\$0.05	2	2	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	2,178.39	15	\$1,167.00	15%	75%	\$0.06	1	1	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	New	234.66	15	\$5,367.00	15%	75%	\$2.02	0	0	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$85,893.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	297.25	15	\$9,525.00	20%	65%	\$0.11	10	16	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	788.21	5	\$13,092.00	15%	25%	\$2.86	6	12	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	614.19	10	\$3,381.00	33%	60%	\$0.59	12	25	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	Existing	4,713.77	10	\$5,292.00	15%	30%	\$0.13	55	101	AEG research & analysis
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	287.54	15	-\$20.19	100%	at stock turnover	-\$0.03	0	0	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	366.61	15	\$159.92	100%	at stock turnover	\$0.01	71	67	EIA 2011
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	85.80	15	\$16.00	100%	at stock turnover	\$0.03	362	374	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	21.18	15	\$3.30	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	271.17	3	\$18,300.00	10%	75%	\$0.56	13	21	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	86.18	6	\$3.25	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	70.14	15	\$59.23	100%	at stock turnover	\$0.06	2	1	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	236.46	3	\$9,525.00	2%	22%	\$0.36	4	8	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	1,373.05	20	\$120,000.00	10%	25%	\$0.21	2	3	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	New	237.36	3	\$28,800.00	10%	75%	\$1.04	2	2	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	268.14	15	\$9,525.00	20%	65%	\$0.13	1	2	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	New	698.12	5	\$13,092.00	15%	25%	\$3.08	1	1	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	629.23	10	\$3,381.00	44%	60%	\$0.56	1	2	AEG research & analysis
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	New	4,231.47	10	\$5,292.00	15%	30%	\$0.14	7	10	AEG research & analysis
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	287.54	15	-\$20.19	100%	at stock turnover	-\$0.03	0	0	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	366.61	15	\$159.92	100%	at stock turnover	\$0.01	13	12	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	85.80	15	\$16.00	100%	at stock turnover	\$0.03	66	68	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	21.18	15	\$3.30	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	86.18	6	\$3.25	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	70.14	15	\$59.23	100%	at stock turnover	\$0.05	0	0	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	209.65	3	\$9,525.00	2%	22%	\$0.43	1	1	BEST Simulation
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	Existing	6,373.01	15	\$85.36	52%	at stock turnover	\$0.00	32	31	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	649.52	10	\$101.54	59%	at stock turnover	\$0.02	13	11	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	Existing	1,101.13	18	\$384.75	52%	at stock turnover	\$0.04	4	4	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	Existing	1,169.43	10	\$252.72	65%	at stock turnover	\$0.03	17	15	Developed from RTF "ComCookingConvectionOven" v2.0
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	New	6,373.01	15	\$119.50	73%	at stock turnover	\$0.00	9	9	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	New	649.52	10	\$142.16	82%	at stock turnover	\$0.03	3	3	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	New	1,101.13	18	\$538.65	73%	at stock turnover	\$0.05	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	New	1,169.43	10	\$353.81	91%	at stock turnover	\$0.05	4	4	Developed from RTF "ComCookingConvectionOven" v2.0
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	6,244.07	23	\$25,941.42	5%	at stock turnover	\$0.14	4	3	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	-4,681.37	15	\$23,400.00	45%	85%	\$1.23	-21	-23	BEST Simulation
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	3,251.89	10	\$4,500.00	15%	35%	\$0.14	9	9	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	48,875.34	15	\$3,573.00	15%	25%	\$0.01	50	50	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	Existing	5,474.31	15	\$9,525.00	20%	65%	\$0.11	34	35	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	10,615.87	23	\$26,202.86	4%	at stock turnover	\$0.12	2	2	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	-1,070.65	18	\$93.00	15%	50%	\$0.02	-5	-5	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	7,719.31	45	\$40,800.00	15%	35%	\$0.39	21	22	BEST Simulation
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	-1,578.34	20	\$246.00	15%	35%	\$0.01	-4	-4	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	5,326.21	45	\$31,200.00	15%	35%	\$0.34	14	15	BPA
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	4,216.27	20	\$10,500.00	15%	50%	\$0.17	20	21	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	10,627.72	45	\$23,130.00	15%	35%	\$0.20	29	30	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	Existing	6,278.49	3	\$18,300.00	10%	75%	\$0.56	54	57	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	Existing	0.00	14	\$100,344.00	3%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	4,592.26	3	\$9,525.00	2%	22%	\$0.36	12	14	BEST Simulation
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$85,893.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	28,381.48	20	\$120,000.00	10%	25%	\$0.21	8	8	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	5,987.56	23	\$27,401.29	6%	at stock turnover	\$0.16	1	1	BEST Simulation
School	Heating	Commissioning	per 30,000 sqft School bldg.	New	5,806.44	3	\$28,800.00	10%	75%	\$1.04	7	7	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	-1,139.93	15	\$23,400.00	45%	85%	\$11.27	-1	-1	BEST Simulation
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	3,086.64	10	\$4,500.00	15%	50%	\$0.16	2	2	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	48,875.34	15	\$3,573.00	15%	25%	\$0.01	6	6	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	New	5,216.80	15	\$9,525.00	20%	65%	\$0.13	4	4	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	9,730.71	23	\$26,842.66	5%	at stock turnover	\$0.14	2	2	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	-828.19	18	\$93.00	15%	35%	\$1.63	0	0	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	2,805.12	45	\$40,800.00	15%	50%	\$1.24	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	-1,253.40	20	\$246.00	15%	50%	\$0.03	-1	-1	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	4,925.66	45	\$31,200.00	15%	50%	\$0.40	3	3	BPA
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	3,986.66	20	\$10,500.00	15%	50%	\$0.20	3	3	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	6,507.74	45	\$23,130.00	15%	50%	\$0.30	4	4	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	New	0.00	14	\$100,344.00	6%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	New	4,219.72	3	\$9,525.00	2%	22%	\$0.43	2	2	BEST Simulation
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$85,893.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	870.25	15	\$9,525.00	20%	65%	\$0.11	29	47	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	729.48	15	-\$51.22	100%	at stock turnover	-\$0.03	1	1	EIA 2011
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	930.07	15	\$405.72	100%	at stock turnover	\$0.01	182	171	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	5,998.02	5	\$14,850.00	5%	15%	\$0.41	14	30	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	Existing	9,495.72	5	\$705.00	15%	50%	\$0.01	86	158	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	5,177.07	12	\$12,000.00	3%	25%	\$0.22	81	168	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	Existing	783.74	16	\$444.00	1%	3%	\$0.04	1	3	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	5,613.76	10	\$1,836.00	7%	45%	\$0.04	112	217	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft School bldg.	Existing	0.00	8	\$2,025.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	Existing	334.61	5	\$3,300.00	10%	25%	\$1.23	1	3	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	239.25	15	\$44.63	100%	at stock turnover	\$0.03	1,146	1,183	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	59.06	15	\$9.20	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	818.15	3	\$18,300.00	10%	75%	\$0.56	38	64	6th Plan
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	294.62	6	\$11.12	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	239.79	15	\$202.48	100%	at stock turnover	\$0.06	102	74	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	718.50	3	\$9,525.00	2%	22%	\$0.36	10	26	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	4,388.26	20	\$120,000.00	10%	25%	\$0.21	7	9	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	New	734.48	3	\$28,800.00	10%	75%	\$1.04	5	8	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	794.41	15	\$9,525.00	20%	65%	\$0.13	4	6	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	729.48	15	-\$51.22	100%	at stock turnover	-\$0.03	0	0	EIA 2011
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	930.07	15	\$405.72	100%	at stock turnover	\$0.01	33	31	EIA 2011
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	New	5,493.99	5	\$14,850.00	5%	15%	\$0.44	2	3	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	New	8,571.04	5	\$705.00	15%	50%	\$0.02	10	16	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	4,642.59	12	\$12,000.00	4%	25%	\$0.24	10	15	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	New	715.36	16	\$444.00	1%	3%	\$0.05	0	0	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	New	4,972.61	10	\$1,836.00	22%	45%	\$0.04	5	8	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft School bldg.	New	0.00	8	\$2,025.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	New	203.77	5	\$3,300.00	10%	25%	\$1.93	0	0	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	239.25	15	\$44.63	100%	at stock turnover	\$0.03	208	215	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	59.06	15	\$9.20	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	294.62	6	\$11.12	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	239.79	15	\$202.48	100%	at stock turnover	\$0.05	19	11	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	645.24	3	\$9,525.00	2%	22%	\$0.43	2	3	BEST Simulation
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	290.69	7	\$1,398.00	1%	4%	\$0.27	0	0	Developed from RTF
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	Existing	4.23	7	\$30.00	1%	3%	\$1.35	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	Existing	207.90	10	\$195.00	1%	3%	\$0.14	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	Existing	0.00	13	\$0.00	44%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	Existing	534.18	15	\$96.00	15%	75%	\$0.02	6	6	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	Existing	559.27	10	\$3.58	1%	at stock turnover	\$0.00	0	0	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	Existing	401.40	10	\$32.71	6%	at stock turnover	\$0.01	1	1	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	Existing	15.58	5	\$60.00	15%	75%	\$0.80	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	536.81	3	\$9,525.00	2%	22%	\$0.36	8	7	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	290.72	7	\$1,398.00	1%	2%	\$0.27	0	0	Developed from RTF
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	New	4.26	7	\$3.00	1%	3%	\$0.14	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	New	534.18	15	\$96.00	15%	75%	\$0.02	1	1	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	New	559.27	10	\$4.29	1%	at stock turnover	\$0.00	0	0	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	New	401.40	10	\$39.25	7%	at stock turnover	\$0.01	0	0	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	New	14.95	5	\$60.00	15%	75%	\$0.80	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	New	521.93	3	\$9,525.00	2%	22%	\$0.43	1	1	BEST Simulation
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website

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School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	2,559.75	6	\$19.21	100%	at stock turnover	\$0.00	35	37	ENERGY STAR Calculator
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	Existing	422.10	4	\$795.00	10%	50%	\$0.51	39	45	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	Existing	201.58	6	\$5.00	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	Existing	445.24	6	\$30.10	100%	at stock turnover	\$0.01	2	3	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	Existing	1,288.46	5	\$1,200.00	10%	25%	\$0.22	47	52	5th Plan
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	Existing	104.13	6	\$0.28	36%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	Existing	555.95	6	\$7.11	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	Existing	747.19	6	\$5.61	100%	at stock turnover	\$0.00	27	27	Assumed same as Desktop
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	New	2,559.75	6	\$19.21	100%	at stock turnover	\$0.00	6	6	ENERGY STAR Calculator
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	New	401.01	4	\$795.00	10%	50%	\$0.52	5	5	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	New	201.58	6	\$5.00	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	New	445.24	6	\$30.10	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	New	1,247.91	5	\$1,200.00	10%	25%	\$0.22	6	6	5th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	New	104.13	6	\$0.28	36%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	New	555.95	6	\$7.11	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	New	747.19	6	\$5.61	100%	at stock turnover	\$0.00	4	4	Assumed same as Desktop
School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	Existing	537.52	9	\$39.72	66%	at stock turnover	\$0.01	4	3	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	Existing	1,452.87	8	\$2,544.00	0%	25%	\$0.30	10	10	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	Existing	1,039.00	9	\$102.00	0%	25%	\$0.02	3	3	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	Existing	177.61	15	\$816.00	0%	25%	\$0.51	5	6	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	Existing	354.70	15	\$4,665.00	0%	25%	\$1.46	11	12	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	Existing	315.64	4	\$5,181.00	0%	25%	\$4.66	1	1	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	Existing	1,239.90	10	\$236.11	66%	at stock turnover	\$0.05	25	22	EIA 2011

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School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	New	537.52	9	\$55.60	92%	at stock turnover	\$0.02	1	1	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	New	1,452.87	8	\$2,544.00	0%	25%	\$0.30	2	2	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	New	1,039.00	9	\$102.00	0%	25%	\$0.02	1	1	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	New	174.43	15	\$816.00	0%	25%	\$0.52	1	1	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	New	348.51	15	\$4,665.00	0%	25%	\$1.49	2	2	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	New	316.05	4	\$5,181.00	0%	25%	\$4.67	0	0	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	New	1,239.90	10	\$330.55	92%	at stock turnover	\$0.08	7	6	EIA 2011
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	Existing	745.58	15	\$9,525.00	20%	65%	\$0.11	10	13	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	407.67	18	\$93.00	15%	50%	\$0.02	5	6	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	853.24	50	\$75,000.00	15%	25%	\$1.58	2	4	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	0.00	45	\$40,800.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	472.88	20	\$10,500.00	15%	50%	\$0.17	5	7	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	-30.49	45	\$23,130.00	15%	35%	\$0.20	0	0	BEST Simulation
School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	Existing	866.62	3	\$18,300.00	10%	75%	\$0.56	16	22	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	629.73	3	\$9,525.00	2%	22%	\$0.36	4	7	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	Existing	225.29	15	\$6,600.00	15%	75%	\$3.05	4	5	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	Existing	2,147.91	18	\$5,100.00	15%	35%	\$0.23	12	17	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	Existing	11,239.85	20	\$18,941.48	100%	at stock turnover	\$0.18	19	19	BEST Simulation
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	Existing	6,345.25	15	\$3,831.00	13%	50%	\$0.07	74	93	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$85,893.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	2,649.82	20	\$120,000.00	10%	25%	\$0.21	2	2	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	New	545.59	3	\$28,800.00	10%	75%	\$1.04	2	2	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	New	483.14	15	\$9,525.00	20%	65%	\$0.13	1	1	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	226.78	18	\$93.00	15%	35%	\$1.63	0	0	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	530.89	50	\$75,000.00	15%	25%	\$2.59	0	0	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	0.00	45	\$40,800.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	304.93	20	\$10,500.00	15%	50%	\$0.20	1	1	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	24.25	45	\$23,130.00	15%	50%	\$0.30	0	0	BEST Simulation

Measure Data and Assumptions

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School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	New	396.49	3	\$9,525.00	2%	22%	\$0.43	1	1	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	New	140.17	15	\$3,900.00	15%	75%	\$2.78	0	0	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	New	1,361.28	18	\$5,100.00	15%	35%	\$0.36	1	1	DEER
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	New	11,446.07	20	\$18,946.78	100%	at stock turnover	\$0.17	1	1	BEST Simulation
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	New	4,180.30	15	\$3,831.00	19%	50%	\$0.11	7	7	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$85,893.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,300.72	5	\$5,400.00	3%	75%	\$0.49	58	63	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	599.83	7	\$1,398.00	1%	4%	\$0.27	1	1	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	Existing	14,226.29	20	\$1,116.00	1%	9%	\$0.01	41	41	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	Existing	2,458.23	5	\$1,200.00	1%	10%	\$0.11	8	8	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	Existing	6,347.28	5	\$993.00	25%	65%	\$0.04	34	36	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	Existing	880.05	15	\$66.00	15%	25%	\$0.01	3	3	Hawaii TRM
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	Existing	69.23	15	\$9.00	15%	75%	\$0.02	1	2	DEER
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	Existing	1,537.12	15	\$2,421.00	16%	75%	\$0.17	32	34	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	Existing	5,316.53	20	\$12,501.00	1%	30%	\$0.22	55	58	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	Existing	542.95	13	\$50.24	50%	at stock turnover	\$0.01	13	13	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,204.32	5	\$5,400.00	3%	75%	\$0.49	55	61	AEG study for PN&L
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	7,198.83	20	\$120,000.00	10%	25%	\$0.21	5	5	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,199.89	5	\$5,400.00	6%	75%	\$0.49	7	7	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	575.98	7	\$1,398.00	1%	2%	\$0.27	0	0	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	New	14,188.46	20	\$1,116.00	1%	11%	\$0.01	6	6	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	New	2,477.54	5	\$1,200.00	0%	75%	\$0.11	9	9	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	New	6,311.27	5	\$993.00	25%	65%	\$0.04	4	4	DEER
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	New	874.91	15	\$66.00	15%	25%	\$0.01	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	New	69.15	15	\$9.00	15%	75%	\$0.02	0	0	DEER
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	New	1,493.62	15	\$2,421.00	1%	75%	\$0.17	5	5	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	New	5,070.69	20	\$12,501.00	1%	30%	\$0.22	7	7	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	New	542.95	13	\$50.24	50%	at stock turnover	\$0.01	3	3	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,116.08	5	\$5,400.00	6%	75%	\$0.49	7	7	AEG study for PN&L
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	15,050.60	23	\$19,465.51	11%	at stock turnover	\$0.24	143	123	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,183.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$753.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	4,790.69	15	\$7,800.00	45%	85%	\$0.83	393	463	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	1,156.95	10	\$1,500.00	15%	35%	\$0.08	57	64	AEG research & analysis
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	9,397.94	15	\$3,572.00	15%	75%	\$0.01	6	7	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	1,947.11	15	\$3,175.00	20%	65%	\$0.06	219	242	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	Existing	3,682.22	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	154.41	18	\$20.00	15%	50%	\$0.01	13	16	BEST Simulation
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	Existing	7,979.62	10	\$6,188.00	18%	75%	\$0.11	416	493	DEER
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	2,060.28	50	\$25,000.00	15%	25%	\$0.67	47	63	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	1,291.53	45	\$13,600.00	15%	35%	\$0.10	63	71	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	711.76	20	\$82.00	15%	35%	\$0.54	10	13	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	1,797.27	45	\$10,400.00	15%	35%	\$0.19	86	99	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	1,230.90	20	\$3,500.00	15%	50%	\$0.09	106	119	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	-671.14	45	\$7,710.00	15%	35%	\$0.14	-32	-37	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	Existing	5,491.25	15	\$2,884.03	1%	at stock turnover	\$0.06	10	9	BEST Simulation
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	2,137.59	3	\$6,100.00	10%	75%	\$0.32	331	383	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	Existing	11,798.20	23	\$19,972.05	72%	at stock turnover	\$0.18	351	354	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$27,210.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	1,548.52	3	\$3,175.00	3%	14%	\$0.20	41	55	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$151.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Office bldg.	Existing	13,033.93	23	\$5,020.71	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,183.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$10,036.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$62,179.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	7,165.16	20	\$40,000.00	10%	25%	\$0.13	115	118	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	New	12,218.00	23	\$16,427.31	13%	at stock turnover	\$0.22	184	175	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,183.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$753.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	New	1,408.43	3	\$9,600.00	10%	75%	\$0.61	97	101	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	944.68	15	\$7,800.00	45%	85%	\$1.47	35	36	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	778.04	10	\$1,500.00	15%	50%	\$0.09	29	30	AEG research & analysis
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	7,492.77	15	\$3,572.00	15%	75%	\$0.01	2	2	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	New	1,314.95	15	\$3,175.00	20%	65%	\$0.08	64	66	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	New	3,682.22	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Small Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	10,702.89	23	\$13,518.34	12%	at stock turnover	\$0.11	88	88	BEST Simulation
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	511.89	18	\$19.00	15%	35%	\$0.00	11	11	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	New	5,245.40	10	\$6,188.00	18%	75%	\$0.16	44	45	DEER
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	1,374.84	50	\$25,000.00	15%	25%	\$1.01	14	15	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	2.18	45	\$13,600.00	15%	50%	\$0.16	0	0	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	1,190.95	45	\$10,400.00	15%	50%	\$0.23	44	46	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	824.55	20	\$3,500.00	15%	50%	\$0.11	31	32	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	-90.05	45	\$7,710.00	15%	50%	\$0.21	-3	-3	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	New	4,734.67	15	\$2,753.55	1%	at stock turnover	\$0.07	6	5	BEST Simulation
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	New	9,461.76	23	\$16,854.78	86%	at stock turnover	\$0.19	227	230	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	New	0.00	15	\$27,210.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	1,020.31	3	\$3,175.00	3%	14%	\$0.25	15	16	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,183.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$10,036.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$62,179.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	65.53	15	\$3,175.00	20%	65%	\$0.06	17	27	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	180.22	5	\$244.00	15%	25%	\$0.22	10	21	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	44.79	10	\$609.00	33%	60%	\$1.33	7	14	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	Existing	1,039.43	10	\$953.00	15%	30%	\$0.10	91	175	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	563.41	15	-\$27.19	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	718.34	15	\$215.43	100%	at stock turnover	\$0.01	423	399	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	187.56	15	\$32.36	100%	at stock turnover	\$0.03	142	140	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	45.06	15	\$4.83	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	59.54	3	\$6,100.00	10%	75%	\$0.32	22	35	6th Plan
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	154.93	6	\$4.02	100%	at stock turnover	\$0.00	0	1	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	126.09	15	\$73.20	100%	at stock turnover	\$0.04	311	227	EIA 2011
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	52.22	3	\$3,175.00	3%	14%	\$0.20	3	8	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	296.88	20	\$40,000.00	10%	25%	\$0.13	8	11	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	51.70	3	\$9,600.00	10%	75%	\$0.61	6	9	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	57.91	15	\$3,175.00	20%	65%	\$0.08	5	7	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	157.09	5	\$244.00	15%	25%	\$0.23	3	4	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	46.06	10	\$609.00	44%	60%	\$1.16	1	2	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	New	914.07	10	\$953.00	15%	30%	\$0.10	26	39	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	563.41	15	-\$27.19	100%	at stock turnover	-\$0.02	1	2	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	718.34	15	\$215.43	100%	at stock turnover	\$0.01	187	176	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	187.56	15	\$32.36	100%	at stock turnover	\$0.03	63	62	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	45.06	15	\$4.83	100%	at stock turnover	\$0.01	0	0	EIA 2011
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	154.93	6	\$4.02	100%	at stock turnover	\$0.00	0	1	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	126.09	15	\$73.20	100%	at stock turnover	\$0.03	139	81	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	44.94	3	\$3,175.00	3%	14%	\$0.25	1	2	BEST Simulation
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,145.52	15	\$3.87	4%	at stock turnover	\$0.00	11	11	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	422.50	10	\$4.11	4%	at stock turnover	\$0.00	4	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	716.26	18	\$17.44	4%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	760.69	10	\$9.25	4%	at stock turnover	\$0.00	5	4	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,145.52	15	\$4.84	5%	at stock turnover	\$0.00	7	7	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	422.50	10	\$5.14	5%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	716.26	18	\$21.80	5%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	760.69	10	\$11.56	5%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	1,121.39	23	\$36,324.21	11%	at stock turnover	\$0.24	9	8	BEST Simulation
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	-3,704.84	15	\$7,800.00	45%	85%	\$0.83	-180	-202	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	1,515.37	10	\$1,500.00	15%	35%	\$0.08	44	47	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	23,107.40	15	\$3,572.00	15%	75%	\$0.01	643	643	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	2,550.55	15	\$3,175.00	20%	65%	\$0.06	170	178	BEST Simulation
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	Existing	7,784.91	23	\$19,215.28	10%	at stock turnover	\$0.09	72	73	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	-284.57	18	\$20.00	15%	50%	\$0.01	-15	-16	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	10,016.71	45	\$13,600.00	15%	35%	\$0.10	291	312	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	-750.92	20	\$82.00	15%	35%	\$0.54	-6	-8	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	2,440.02	45	\$10,400.00	15%	35%	\$0.19	69	76	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	1,964.86	20	\$3,500.00	15%	50%	\$0.09	100	107	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	4,867.71	45	\$7,710.00	15%	35%	\$0.14	139	151	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	2,906.33	3	\$6,100.00	10%	75%	\$0.32	266	294	6th Plan
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	Existing	0.00	14	\$46,145.00	3%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	2,105.43	3	\$3,175.00	3%	14%	\$0.20	33	41	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$151.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$62,179.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	12,693.36	20	\$40,000.00	10%	25%	\$0.13	97	98	AEG research & analysis
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	New	2,528.07	3	\$9,600.00	10%	75%	\$0.61	82	84	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	-489.55	15	\$7,800.00	45%	85%	\$1.47	-9	-9	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	1,380.37	10	\$1,500.00	15%	50%	\$0.09	25	25	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	23,022.79	15	\$3,572.00	15%	75%	\$0.01	199	199	Developed from RTF
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	New	2,332.83	15	\$3,175.00	20%	65%	\$0.08	54	54	BEST Simulation
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	7,135.80	23	\$19,684.47	12%	at stock turnover	\$0.11	54	54	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	1,044.03	18	\$19.00	15%	35%	\$0.00	11	11	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	6,224.49	45	\$13,600.00	15%	50%	\$0.16	109	112	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	2,137.63	45	\$10,400.00	15%	50%	\$0.23	37	38	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	1,782.92	20	\$3,500.00	15%	50%	\$0.11	32	32	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	2,823.93	45	\$7,710.00	15%	50%	\$0.21	50	51	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	New	0.00	14	\$46,145.00	6%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	1,831.41	3	\$3,175.00	3%	14%	\$0.25	13	13	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$62,179.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	401.04	15	\$3,175.00	20%	65%	\$0.06	102	165	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	548.02	15	-\$26.45	100%	at stock turnover	-\$0.02	3	5	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	698.72	15	\$209.55	100%	at stock turnover	\$0.01	820	773	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	2,441.42	5	\$6,392.00	5%	15%	\$0.42	44	94	Illinois TRM
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	Existing	3,899.72	5	\$453.00	15%	50%	\$0.02	271	498	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	2,384.20	12	\$4,000.00	3%	25%	\$0.16	289	591	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	Existing	357.86	16	\$285.00	1%	3%	\$0.06	4	9	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	2,585.44	10	\$1,182.00	7%	45%	\$0.05	398	763	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	Existing	276.38	5	\$1,100.00	10%	25%	\$0.52	6	18	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	191.37	15	\$33.02	100%	at stock turnover	\$0.03	3,793	3,746	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	45.98	15	\$4.93	100%	at stock turnover	\$0.01	0	4	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	380.65	3	\$6,100.00	10%	75%	\$0.32	136	226	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	172.14	6	\$4.47	100%	at stock turnover	\$0.00	0	4	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	140.10	15	\$81.33	100%	at stock turnover	\$0.04	890	649	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	330.88	3	\$3,175.00	3%	14%	\$0.20	20	50	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,028.83	20	\$40,000.00	10%	25%	\$0.13	57	75	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	340.72	3	\$9,600.00	10%	75%	\$0.61	41	63	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	367.26	15	\$3,175.00	20%	65%	\$0.08	31	47	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	548.02	15	-\$26.45	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	698.72	15	\$209.55	100%	at stock turnover	\$0.01	363	341	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	2,239.03	5	\$6,392.00	5%	15%	\$0.45	14	21	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	New	3,480.58	5	\$453.00	15%	50%	\$0.02	77	117	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	2,146.78	12	\$4,000.00	4%	25%	\$0.16	81	125	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	New	330.71	16	\$285.00	1%	3%	\$0.07	1	2	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	2,298.42	10	\$1,182.00	22%	45%	\$0.05	45	69	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timelocks and Timers	per 10,000 sqft Small Office bldg.	New	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	New	237.11	5	\$1,100.00	10%	25%	\$0.56	2	3	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	191.37	15	\$33.02	100%	at stock turnover	\$0.03	1,676	1,659	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	45.98	15	\$4.93	100%	at stock turnover	\$0.01	0	2	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	172.14	6	\$4.47	100%	at stock turnover	\$0.00	0	2	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	140.10	15	\$81.33	100%	at stock turnover	\$0.03	399	233	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	298.42	3	\$3,175.00	3%	14%	\$0.25	8	12	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	71.74	7	\$1,397.00	1%	4%	\$0.19	1	1	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	Existing	1.05	7	\$31.00	1%	3%	\$5.67	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	Existing	51.10	10	\$195.00	1%	3%	\$0.57	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	Existing	362.99	15	\$3,772.00	15%	75%	\$1.24	15	15	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	Existing	138.76	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	Existing	24.90	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	392.71	3	\$3,175.00	3%	14%	\$0.20	19	19	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	81.92	7	\$1,397.00	1%	2%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	New	1.19	7	\$2.00	1%	3%	\$0.32	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	New	362.99	15	\$3,772.00	15%	75%	\$1.24	5	5	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	New	138.76	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	New	24.90	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	388.11	3	\$3,175.00	3%	14%	\$0.25	8	8	BEST Simulation
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,131.73	6	\$31.00	100%	at stock turnover	\$0.00	430	454	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	Existing	108.54	4	\$265.00	10%	50%	\$0.68	78	87	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	813.44	6	\$20.16	100%	at stock turnover	\$0.01	85	89	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	718.66	6	\$48.59	100%	at stock turnover	\$0.01	30	32	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	319.51	5	\$400.00	10%	25%	\$0.29	86	96	5th Plan
Small Office	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	420.19	6	\$0.63	20%	at stock turnover	\$0.00	17	18	Assumed same as Desktop
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	1,507.57	6	\$11.31	100%	at stock turnover	\$0.00	410	422	Assumed same as Desktop
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,131.73	6	\$31.00	100%	at stock turnover	\$0.00	178	178	ENERGY STAR Calculator
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	New	119.03	4	\$265.00	10%	50%	\$0.61	26	28	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	813.44	6	\$20.16	100%	at stock turnover	\$0.01	35	35	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	718.66	6	\$48.59	100%	at stock turnover	\$0.01	12	12	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	351.64	5	\$400.00	10%	25%	\$0.26	29	31	5th Plan
Small Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,121.71	6	\$14.34	100%	at stock turnover	\$0.00	9	9	ENERGY STAR Calculator
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,507.57	6	\$11.31	100%	at stock turnover	\$0.00	149	148	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	Existing	176.08	9	\$1.01	5%	at stock turnover	\$0.00	1	1	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	Existing	1,039.00	9	\$103.00	0%	10%	\$0.02	5	5	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$815.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$4,665.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$3,751.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	Existing	406.16	10	\$6.00	5%	at stock turnover	\$0.00	5	4	EIA 2011
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	New	0.00	5	\$1,547.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	New	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	New	176.08	9	\$1.21	6%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	New	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	New	1,039.00	9	\$103.00	0%	10%	\$0.02	2	2	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	New	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	New	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	New	0.00	15	\$815.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	New	0.00	15	\$4,665.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	New	0.00	4	\$3,751.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	New	406.16	10	\$7.20	6%	at stock turnover	\$0.01	3	2	EIA 2011
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	85.23	15	\$7,800.00	45%	85%	\$0.82	7	9	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	536.54	15	\$3,175.00	20%	65%	\$0.06	58	74	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	295.74	18	\$20.00	15%	50%	\$0.01	25	35	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	614.75	50	\$25,000.00	15%	25%	\$0.67	14	22	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	-54.61	45	\$13,600.00	15%	35%	\$0.10	-3	-3	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	54.47	20	\$82.00	15%	35%	\$0.53	1	1	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	340.23	20	\$3,500.00	15%	50%	\$0.09	28	36	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	-21.94	45	\$7,710.00	15%	35%	\$0.14	-1	-1	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	625.34	3	\$6,100.00	10%	75%	\$0.32	94	124	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	453.00	3	\$3,175.00	3%	14%	\$0.20	12	19	BEST Simulation
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$151.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	Existing	162.31	15	\$2,200.00	15%	25%	\$1.45	4	5	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	Existing	1,545.22	18	\$1,700.00	15%	35%	\$0.11	73	94	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	Existing	7,414.53	20	\$7,909.59	100%	at stock turnover	\$0.11	274	277	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	Existing	4,376.27	15	\$1,762.00	13%	25%	\$0.05	125	156	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$62,179.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	1,866.19	20	\$40,000.00	10%	25%	\$0.13	26	26	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	New	384.82	3	\$9,600.00	10%	75%	\$0.61	22	24	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	65.65	15	\$7,800.00	45%	85%	\$1.47	2	2	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	New	340.27	15	\$3,175.00	20%	65%	\$0.08	14	14	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	265.96	18	\$19.00	15%	35%	\$0.00	5	5	BEST Simulation
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	375.62	50	\$25,000.00	15%	25%	\$1.01	3	4	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	54.29	45	\$13,600.00	15%	50%	\$0.16	2	2	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	214.76	20	\$3,500.00	15%	50%	\$0.11	7	7	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	16.75	45	\$7,710.00	15%	50%	\$0.21	1	1	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	278.77	3	\$3,175.00	3%	14%	\$0.25	4	4	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$57.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	New	99.17	15	\$1,300.00	15%	25%	\$1.32	1	1	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	New	957.67	18	\$1,700.00	15%	35%	\$0.17	17	18	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	New	6,906.99	20	\$7,782.04	100%	at stock turnover	\$0.12	102	104	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	New	2,759.77	15	\$1,762.00	19%	25%	\$0.07	14	14	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$62,179.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	725.60	5	\$1,800.00	3%	75%	\$0.46	76	122	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	1,070.59	7	\$1,397.00	1%	4%	\$0.18	5	7	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	Existing	4,027.28	20	\$1,117.00	1%	10%	\$0.02	52	80	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	746.69	5	\$400.00	1%	10%	\$0.10	10	16	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	Existing	1,976.25	5	\$110.00	25%	65%	\$0.01	44	70	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$101.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	Existing	39.76	15	\$3.00	15%	75%	\$0.01	4	5	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	467.90	15	\$1,397.00	16%	75%	\$0.28	41	64	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	Existing	1,484.86	20	\$12,500.00	1%	30%	\$0.61	61	103	BEST Simulation
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	Existing	6,843.13	14	\$1,088.63	60%	at stock turnover	\$0.02	871	838	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	696.39	5	\$1,800.00	3%	75%	\$0.46	72	119	AEG study for PN&L
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,181.13	20	\$40,000.00	10%	25%	\$0.13	15	19	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	674.02	5	\$1,800.00	6%	75%	\$0.45	20	29	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	1,001.90	7	\$1,397.00	1%	2%	\$0.18	0	0	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	New	3,960.01	20	\$1,117.00	1%	12%	\$0.02	18	26	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	New	731.04	5	\$400.00	0%	75%	\$0.10	24	35	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	New	1,918.42	5	\$110.00	25%	65%	\$0.01	13	18	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	New	0.00	15	\$101.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	New	38.78	15	\$3.00	15%	75%	\$0.01	1	1	DEER
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	New	434.64	15	\$1,397.00	1%	75%	\$0.27	14	20	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	New	1,386.36	20	\$12,500.00	1%	30%	\$0.60	17	25	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	New	6,843.13	14	\$1,088.63	60%	at stock turnover	\$0.02	448	434	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	648.61	5	\$1,800.00	6%	75%	\$0.45	20	28	AEG study for PN&L
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	13,321.67	23	\$16,203.11	7%	at stock turnover	\$0.12	25	21	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	Existing	7,064.78	23	\$2,294.10	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,455.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$537.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	5,076.22	15	\$7,800.00	45%	85%	\$0.82	127	150	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	926.32	10	\$1,500.00	15%	35%	\$0.09	14	16	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	8,309.10	15	\$2,381.00	15%	75%	\$0.01	7	8	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	1,658.04	15	\$3,175.00	20%	65%	\$0.07	57	63	BEST Simulation
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	11,748.16	23	\$13,333.67	5%	at stock turnover	\$0.13	22	22	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	147.98	18	\$14.00	15%	50%	\$0.02	4	5	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	Existing	7,094.06	10	\$4,408.00	18%	75%	\$0.09	110	129	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	1,749.64	50	\$25,000.00	15%	25%	\$0.78	12	16	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	1,624.68	45	\$13,600.00	15%	35%	\$0.10	24	27	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	838.47	20	\$82.00	15%	50%	\$0.06	22	25	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	1,528.23	45	\$10,400.00	15%	35%	\$0.22	22	26	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	981.17	20	\$3,500.00	15%	50%	\$0.11	25	29	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	-570.68	45	\$7,710.00	15%	35%	\$0.17	-8	-10	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	1,824.25	3	\$6,100.00	10%	75%	\$0.36	86	100	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	Existing	10,422.07	23	\$16,606.51	70%	at stock turnover	\$0.17	91	92	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$19,385.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	1,317.87	3	\$3,175.00	0%	3%	\$0.22	3	4	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$100.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	Existing	11,521.43	23	\$3,471.07	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,455.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$6,691.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$20,328.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	6,778.11	20	\$40,000.00	10%	25%	\$0.15	32	33	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	12,648.62	23	\$14,102.57	9%	at stock turnover	\$0.12	17	15	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	New	5,775.80	23	\$2,015.97	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,455.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$537.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	New	1,414.61	3	\$9,600.00	10%	75%	\$0.67	29	30	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	735.98	10	\$1,500.00	15%	50%	\$0.11	8	8	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	6,559.00	15	\$2,381.00	15%	75%	\$0.01	2	2	Developed from RTF
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	New	1,318.69	15	\$3,175.00	20%	65%	\$0.08	19	19	BEST Simulation
Small Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Retail bldg.	New	3,252.69	15	\$24,989.47	10%	at stock turnover	\$0.94	11	10	PacifiCorp Program Data
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	11,176.40	23	\$11,605.13	7%	at stock turnover	\$0.12	15	15	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	123.61	18	\$13.00	15%	50%	\$0.00	1	1	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	New	5,603.23	10	\$4,408.00	18%	75%	\$0.11	14	14	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	1,380.86	50	\$25,000.00	15%	25%	\$1.02	4	4	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	131.58	45	\$13,600.00	15%	50%	\$0.21	1	1	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	1,097.69	20	\$82.00	15%	50%	\$0.01	12	13	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	1,191.88	45	\$10,400.00	15%	50%	\$0.27	13	14	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	779.99	20	\$3,500.00	15%	50%	\$0.13	9	9	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	-89.23	45	\$7,710.00	15%	50%	\$0.27	-1	-1	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Retail bldg.	New	4,182.37	15	\$2,432.34	4%	at stock turnover	\$0.07	6	6	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	New	9,903.79	23	\$14,453.68	90%	at stock turnover	\$0.15	68	68	BEST Simulation
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$19,385.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	1,021.94	3	\$3,175.00	0%	3%	\$0.28	1	1	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$38.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	New	9,496.18	23	\$3,050.25	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,455.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$6,691.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$20,328.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	93.76	15	\$3,175.00	20%	65%	\$0.07	9	14	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	251.34	5	\$4,548.00	15%	25%	\$2.94	5	11	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	180.16	10	\$2,603.00	33%	60%	\$1.46	10	21	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	Existing	1,485.77	10	\$4,074.00	15%	30%	\$0.30	47	94	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	179.88	15	-\$7.12	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	229.34	15	\$56.43	100%	at stock turnover	\$0.01	212	197	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	34.82	15	\$6.73	100%	at stock turnover	\$0.03	122	119	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	8.15	15	\$0.72	100%	at stock turnover	\$0.01	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	86.26	3	\$6,100.00	10%	75%	\$0.35	11	19	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	39.64	6	\$0.84	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	32.26	15	\$15.37	100%	at stock turnover	\$0.03	62	45	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	80.50	3	\$3,175.00	0%	3%	\$0.22	1	1	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	423.51	20	\$40,000.00	10%	25%	\$0.15	4	5	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	69.20	3	\$9,600.00	10%	75%	\$0.67	3	4	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	76.67	15	\$3,175.00	20%	65%	\$0.08	2	3	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	201.34	5	\$4,548.00	15%	25%	\$3.42	1	2	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	153.21	10	\$2,603.00	44%	60%	\$1.59	2	2	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	New	1,193.57	10	\$4,074.00	15%	30%	\$0.35	11	17	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	179.88	15	-\$7.12	100%	at stock turnover	-\$0.01	0	1	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	229.34	15	\$56.43	100%	at stock turnover	\$0.01	84	78	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	34.82	15	\$6.73	100%	at stock turnover	\$0.03	48	47	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	8.15	15	\$0.72	100%	at stock turnover	\$0.01	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	39.64	6	\$0.84	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	32.26	15	\$15.37	100%	at stock turnover	\$0.03	24	14	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	64.67	3	\$3,175.00	0%	3%	\$0.28	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	3,543.18	15	\$3.31	4%	at stock turnover	\$0.00	3	3	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	361.11	10	\$3.51	4%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	612.19	18	\$14.91	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	650.16	10	\$7.91	4%	at stock turnover	\$0.00	2	1	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	3,543.18	15	\$4.96	5%	at stock turnover	\$0.00	2	2	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	361.11	10	\$5.27	5%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	612.19	18	\$22.36	5%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	650.16	10	\$11.86	5%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	2,847.61	23	\$17,929.39	7%	at stock turnover	\$0.12	5	4	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	-3,955.57	15	\$7,800.00	45%	85%	\$0.82	-33	-37	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,294.58	10	\$1,500.00	15%	35%	\$0.09	7	7	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	19,775.03	15	\$2,381.00	15%	75%	\$0.01	87	87	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	2,178.93	15	\$3,175.00	20%	65%	\$0.07	25	26	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	3,317.72	23	\$19,466.01	5%	at stock turnover	\$0.13	5	5	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	-186.74	18	\$14.00	15%	50%	\$0.02	-2	-2	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	8,608.11	45	\$13,600.00	15%	35%	\$0.10	43	46	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-641.05	20	\$82.00	15%	50%	\$0.06	-6	-6	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	2,084.52	45	\$10,400.00	15%	35%	\$0.22	10	11	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,649.53	20	\$3,500.00	15%	50%	\$0.11	14	16	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	4,158.50	45	\$7,710.00	15%	35%	\$0.17	20	22	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	2,488.12	3	\$6,100.00	10%	75%	\$0.36	39	43	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	Existing	0.00	14	\$19,101.00	3%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	1,797.47	3	\$3,175.00	0%	3%	\$0.22	1	2	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$100.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$20,328.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	9,871.57	20	\$40,000.00	10%	25%	\$0.15	12	12	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	2,584.73	23	\$16,334.37	9%	at stock turnover	\$0.12	3	2	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	New	1,971.74	3	\$9,600.00	10%	75%	\$0.67	10	11	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	1,073.51	10	\$1,500.00	15%	50%	\$0.11	3	3	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	19,681.11	15	\$2,381.00	15%	75%	\$0.01	24	24	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	New	1,814.25	15	\$3,175.00	20%	65%	\$0.08	7	7	BEST Simulation
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	3,108.05	23	\$16,942.50	7%	at stock turnover	\$0.12	4	4	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	499.75	18	\$13.00	15%	50%	\$0.00	1	1	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	4,817.07	45	\$13,600.00	15%	50%	\$0.21	14	14	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	380.20	20	\$82.00	15%	50%	\$0.01	1	1	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	1,686.10	45	\$10,400.00	15%	50%	\$0.27	5	5	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	1,386.58	20	\$3,500.00	15%	50%	\$0.13	4	4	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	2,172.91	45	\$7,710.00	15%	50%	\$0.27	6	6	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	New	0.00	14	\$19,101.00	6%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	1,424.42	3	\$3,175.00	0%	3%	\$0.28	0	0	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$38.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$20,328.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	559.86	15	\$3,175.00	20%	65%	\$0.07	53	86	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	400.16	15	-\$15.85	100%	at stock turnover	-\$0.01	2	3	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	510.20	15	\$125.55	100%	at stock turnover	\$0.01	590	550	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	2,665.67	5	\$18,917.00	5%	15%	\$1.13	18	38	Illinois TRM
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	Existing	4,241.73	5	\$1,157.00	15%	50%	\$0.05	108	203	Illinois TRM
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	3,103.17	12	\$4,000.00	3%	25%	\$0.12	136	290	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	Existing	447.81	16	\$729.00	1%	3%	\$0.12	2	5	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	3,330.46	10	\$3,017.00	7%	45%	\$0.10	183	372	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$3,300.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	Existing	422.64	5	\$1,100.00	10%	25%	\$0.33	3	10	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	106.87	15	\$20.65	100%	at stock turnover	\$0.03	1,557	1,524	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	25.01	15	\$2.20	100%	at stock turnover	\$0.01	0	1	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	496.21	3	\$6,100.00	10%	75%	\$0.35	64	110	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	114.92	6	\$2.45	100%	at stock turnover	\$0.00	0	2	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	93.54	15	\$44.55	100%	at stock turnover	\$0.03	409	298	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	430.62	3	\$3,175.00	0%	3%	\$0.22	3	7	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	2,401.83	20	\$40,000.00	10%	25%	\$0.15	23	29	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	422.73	3	\$9,600.00	10%	75%	\$0.67	17	26	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	470.84	15	\$3,175.00	20%	65%	\$0.08	13	20	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	400.16	15	-\$15.85	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	510.20	15	\$125.55	100%	at stock turnover	\$0.01	234	217	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	2,319.14	5	\$18,917.00	5%	15%	\$1.23	5	7	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	New	3,665.25	5	\$1,157.00	15%	50%	\$0.06	27	40	Illinois TRM
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	2,673.41	12	\$4,000.00	4%	25%	\$0.13	35	52	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	New	386.22	16	\$729.00	1%	3%	\$0.14	0	1	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	2,786.75	10	\$3,017.00	22%	45%	\$0.11	19	28	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Lighting - Timelocks and Timers	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$3,300.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	New	291.80	5	\$1,100.00	10%	25%	\$0.46	1	1	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	106.87	15	\$20.65	100%	at stock turnover	\$0.03	616	604	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	25.01	15	\$2.20	100%	at stock turnover	\$0.01	0	1	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	114.92	6	\$2.45	100%	at stock turnover	\$0.00	0	1	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	93.54	15	\$44.55	100%	at stock turnover	\$0.03	160	94	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	366.82	3	\$3,175.00	0%	3%	\$0.28	1	1	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	85.28	7	\$932.00	1%	8%	\$0.35	1	1	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	Existing	1.25	7	\$20.00	1%	3%	\$3.07	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	Existing	60.98	10	\$130.00	1%	3%	\$0.32	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	Existing	266.43	15	\$1,395.00	15%	75%	\$0.63	4	4	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	138.76	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	Existing	24.90	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	287.47	3	\$3,175.00	0%	3%	\$0.23	1	1	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	98.40	7	\$932.00	1%	4%	\$0.35	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	New	1.44	7	\$1.00	1%	3%	\$0.13	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	New	0.00	13	\$0.00	26%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	New	266.43	15	\$1,395.00	15%	75%	\$0.63	1	1	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	New	138.76	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	New	24.90	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	280.80	3	\$3,175.00	0%	3%	\$0.28	1	1	BEST Simulation
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	282.14	6	\$2.12	100%	at stock turnover	\$0.00	11	12	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	Existing	29.28	4	\$265.00	10%	50%	\$2.45	9	10	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	55.55	6	\$1.38	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	49.08	6	\$3.32	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	86.88	5	\$400.00	10%	25%	\$1.06	10	11	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	114.77	6	\$0.86	100%	at stock turnover	\$0.00	8	9	Assumed same as Desktop
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	61.28	6	\$0.78	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	411.79	6	\$3.09	100%	at stock turnover	\$0.00	42	43	Assumed same as Desktop
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	282.14	6	\$2.12	100%	at stock turnover	\$0.00	4	4	ENERGY STAR Calculator
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	New	31.72	4	\$265.00	10%	50%	\$2.22	3	3	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	55.55	6	\$1.38	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	49.08	6	\$3.32	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	94.97	5	\$400.00	10%	25%	\$0.96	3	3	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	114.77	6	\$0.86	100%	at stock turnover	\$0.00	3	3	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	61.28	6	\$0.78	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	411.79	6	\$3.09	100%	at stock turnover	\$0.00	14	13	Assumed same as Desktop
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,754.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	Existing	235.85	9	\$1.35	5%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	Existing	410.15	8	\$1,695.00	0%	25%	\$0.72	1	1	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	Existing	692.67	9	\$69.00	0%	25%	\$0.02	1	1	PacificCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	Existing	61.91	15	\$543.00	0%	25%	\$0.96	0	0	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	Existing	123.65	15	\$3,110.00	0%	25%	\$2.72	1	1	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,226.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	Existing	544.03	10	\$8.04	5%	at stock turnover	\$0.00	2	2	EIA 2011
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,031.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	New	235.85	9	\$2.03	8%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	New	473.25	8	\$1,695.00	0%	25%	\$0.62	0	0	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	New	692.67	9	\$69.00	0%	25%	\$0.02	1	1	PacificCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	New	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	New	60.12	15	\$543.00	0%	25%	\$0.99	0	0	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	New	120.12	15	\$3,110.00	0%	25%	\$2.82	0	0	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,226.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	New	544.03	10	\$12.06	8%	at stock turnover	\$0.01	1	1	EIA 2011
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	-8.86	15	\$7,800.00	45%	85%	\$0.81	0	0	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	491.51	15	\$3,175.00	20%	65%	\$0.07	21	25	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	99.91	18	\$14.00	15%	50%	\$0.02	3	4	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	564.42	50	\$25,000.00	15%	25%	\$0.78	5	7	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	87.97	45	\$13,600.00	15%	35%	\$0.10	2	2	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-3.81	20	\$82.00	15%	50%	\$0.06	0	0	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	311.38	20	\$3,500.00	15%	50%	\$0.11	10	12	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	-20.07	45	\$7,710.00	15%	35%	\$0.17	0	0	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	573.58	3	\$6,100.00	10%	75%	\$0.36	34	42	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	414.36	3	\$3,175.00	0%	3%	\$0.22	1	2	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$100.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	Existing	149.01	15	\$2,200.00	15%	25%	\$1.59	1	2	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	Existing	1,414.06	18	\$1,700.00	15%	35%	\$0.12	26	32	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	Existing	5,177.38	20	\$5,123.28	100%	at stock turnover	\$0.10	92	93	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	Existing	4,019.46	15	\$730.00	13%	25%	\$0.02	45	53	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$20,328.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,863.43	20	\$40,000.00	10%	25%	\$0.15	9	9	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	New	385.91	3	\$9,600.00	10%	75%	\$0.67	8	8	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	New	339.77	15	\$3,175.00	20%	65%	\$0.08	5	5	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	74.42	18	\$13.00	15%	50%	\$0.00	1	1	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	376.68	50	\$25,000.00	15%	25%	\$1.02	1	1	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	6.19	45	\$13,600.00	15%	50%	\$0.21	0	0	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	108.05	20	\$82.00	15%	50%	\$0.01	1	1	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	214.44	20	\$3,500.00	15%	50%	\$0.13	2	2	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	16.75	45	\$7,710.00	15%	50%	\$0.27	0	0	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

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Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	278.79	3	\$3,175.00	0%	3%	\$0.28	0	0	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$38.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	New	99.45	15	\$1,300.00	15%	25%	\$1.34	0	0	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	New	957.92	18	\$1,700.00	15%	35%	\$0.17	6	6	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	New	5,077.29	20	\$4,821.17	100%	at stock turnover	\$0.10	29	30	BEST Simulation
Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	New	2,755.72	15	\$730.00	19%	25%	\$0.03	5	5	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$20,328.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	610.02	5	\$1,800.00	3%	75%	\$0.53	21	35	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	327.92	7	\$932.00	1%	8%	\$0.35	1	2	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	Existing	3,711.44	20	\$745.00	1%	5%	\$0.02	9	13	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	650.96	5	\$400.00	1%	10%	\$0.12	3	5	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	Existing	1,678.72	5	\$221.00	25%	65%	\$0.03	13	20	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$94.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	Existing	18.43	15	\$3.00	15%	75%	\$0.02	1	1	DEER
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	407.34	15	\$1,141.00	16%	75%	\$0.26	12	19	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	Existing	1,405.61	20	\$8,333.00	1%	30%	\$0.47	20	32	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	Existing	5,850.40	14	\$1,001.66	62%	at stock turnover	\$0.02	255	245	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	585.56	5	\$1,800.00	3%	75%	\$0.53	20	34	AEG study for PN&L
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,831.92	20	\$40,000.00	10%	25%	\$0.15	4	5	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	525.60	5	\$1,800.00	6%	75%	\$0.54	5	7	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	294.27	7	\$932.00	1%	4%	\$0.35	0	0	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	New	3,469.11	20	\$745.00	1%	7%	\$0.02	3	4	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	New	614.03	5	\$400.00	0%	75%	\$0.12	6	9	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	New	1,563.27	5	\$221.00	25%	65%	\$0.03	3	4	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$94.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	New	17.30	15	\$3.00	15%	75%	\$0.02	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	365.39	15	\$1,141.00	1%	75%	\$0.27	4	5	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	New	1,257.23	20	\$8,333.00	1%	30%	\$0.48	5	7	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	New	5,850.40	14	\$1,001.66	62%	at stock turnover	\$0.02	108	104	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	546.16	5	\$1,800.00	6%	75%	\$0.54	5	7	AEG study for PN&L
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	Existing	12,640.16	23	\$13,929.57	2%	at stock turnover	\$1.82	2	2	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	Existing	40,983.62	23	\$13,308.33	3%	at stock turnover	\$0.03	8	8	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	17,373.70	10	\$810.00	15%	75%	\$0.01	3	3	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	3,315.54	15	\$950.00	15%	75%	\$0.03	1	1	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	Existing	823.53	15	\$2,220.00	15%	75%	\$0.25	0	0	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	Existing	31,164.27	12	\$45,000.00	15%	75%	\$0.17	27	33	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	5,531.21	10	\$15,000.00	15%	35%	\$0.08	2	2	AEG research & analysis
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	46,842.59	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	9,307.96	15	\$31,750.00	20%	65%	\$0.07	6	7	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	Existing	18,238.57	15	\$2,457.48	0%	at stock turnover	\$0.02	0	0	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	Existing	65,759.10	23	\$100,663.44	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	1,994.50	18	\$60.00	15%	25%	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	Existing	39,109.95	10	\$18,240.00	18%	75%	\$0.06	12	14	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	10,044.49	50	\$250,000.00	15%	25%	\$1.52	1	2	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	23,075.93	45	\$136,000.00	15%	35%	\$0.07	7	8	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	5,713.57	20	\$820.00	15%	35%	\$0.01	2	2	BEST Simulation
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	8,571.37	45	\$104,000.00	15%	35%	\$0.20	2	3	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	5,884.91	20	\$35,000.00	15%	50%	\$0.10	3	3	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	-3,422.74	45	\$77,100.00	15%	35%	\$0.10	-1	-1	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	Existing	27,198.95	15	\$14,285.00	1%	at stock turnover	\$0.06	4	3	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	10,210.88	3	\$61,000.00	10%	75%	\$0.37	9	11	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	Existing	58,438.39	23	\$67,918.33	9%	at stock turnover	\$0.12	7	7	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$80,200.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	7,389.26	3	\$31,750.00	3%	11%	\$0.25	1	1	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	Existing	59,921.03	23	\$18,052.43	0%	at stock turnover	\$0.03	1	1	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	17,308.80	10	\$810.00	15%	75%	\$0.01	0	0	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	21,558.62	4	\$810.00	15%	75%	\$0.01	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	3,850.47	15	\$950.00	15%	75%	\$0.02	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	Existing	690.83	15	\$4,390.00	15%	75%	\$0.52	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	40,434.62	20	\$400,000.00	10%	15%	\$0.15	1	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	New	11,730.39	23	\$12,067.29	2%	at stock turnover	\$1.79	1	1	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	New	33,506.15	23	\$11,694.88	3%	at stock turnover	\$0.04	5	5	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	20,682.39	10	\$810.00	15%	75%	\$0.01	2	2	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	2,432.23	15	\$950.00	15%	75%	\$0.04	0	0	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$2,220.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	New	7,982.97	3	\$96,000.00	10%	75%	\$0.63	3	4	6th Plan
Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	New	24,453.73	12	\$45,000.00	15%	75%	\$0.21	10	10	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	4,390.49	10	\$15,000.00	15%	50%	\$0.09	1	1	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	37,176.10	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	New	7,832.84	15	\$31,750.00	20%	65%	\$0.08	2	2	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	New	18,238.57	15	\$2,703.23	0%	at stock turnover	\$0.02	0	0	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	New	49,793.29	23	\$74,025.13	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	2,331.12	18	\$50.00	15%	25%	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	New	29,458.38	10	\$18,240.00	18%	75%	\$0.08	2	2	DEER
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	7,793.20	50	\$250,000.00	15%	25%	\$1.96	1	1	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	1,533.41	45	\$136,000.00	15%	50%	\$0.09	0	0	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	4,686.52	20	\$820.00	15%	25%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	6,742.95	45	\$104,000.00	15%	50%	\$0.21	2	2	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	4,653.04	20	\$35,000.00	15%	50%	\$0.11	1	1	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	-543.84	45	\$77,100.00	15%	50%	\$0.15	0	0	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	New	23,451.50	15	\$13,638.69	1%	at stock turnover	\$0.07	2	2	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	New	54,225.46	23	\$58,838.16	9%	at stock turnover	\$0.11	6	6	BEST Simulation
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$80,200.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	5,777.06	3	\$31,750.00	3%	11%	\$0.28	0	0	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	New	49,388.06	23	\$15,863.82	0%	at stock turnover	\$0.03	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	11,893.25	10	\$810.00	15%	75%	\$0.01	0	0	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	14,764.77	4	\$810.00	15%	75%	\$0.01	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	1,804.55	15	\$950.00	15%	75%	\$0.05	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$4,390.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	486.17	15	\$31,750.00	20%	65%	\$0.07	4	7	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	1,344.13	5	\$1,970.00	15%	25%	\$0.24	2	5	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	548.25	10	\$6,520.00	33%	60%	\$1.15	3	6	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	Existing	7,712.90	10	\$10,210.00	15%	30%	\$0.14	21	44	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	790.40	15	-\$40.69	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,007.75	15	\$322.37	100%	at stock turnover	\$0.01	66	61	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	70.32	15	\$12.94	100%	at stock turnover	\$0.03	57	56	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.90	15	\$1.93	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	442.95	3	\$61,000.00	10%	75%	\$0.37	5	9	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	129.99	6	\$3.60	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	105.79	15	\$65.51	100%	at stock turnover	\$0.04	78	57	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	384.64	3	\$31,750.00	3%	11%	\$0.25	1	1	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	2,245.93	20	\$400,000.00	10%	15%	\$0.15	1	1	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	366.34	3	\$96,000.00	10%	75%	\$0.63	2	3	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	406.56	15	\$31,750.00	20%	65%	\$0.08	1	2	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	1,111.95	5	\$1,970.00	15%	25%	\$0.27	1	1	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	469.74	10	\$6,520.00	44%	60%	\$1.24	1	1	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	New	6,390.66	10	\$10,210.00	15%	30%	\$0.16	7	11	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	790.40	15	-\$40.69	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,007.75	15	\$322.37	100%	at stock turnover	\$0.01	36	33	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	70.32	15	\$12.94	100%	at stock turnover	\$0.03	31	30	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.90	15	\$1.93	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	129.99	6	\$3.60	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	105.79	15	\$65.51	100%	at stock turnover	\$0.04	43	25	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	318.11	3	\$31,750.00	3%	11%	\$0.28	0	0	BEST Simulation
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	7,624.92	15	\$4.42	2%	at stock turnover	\$0.00	0	0	Illinois TRM
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	777.11	10	\$4.70	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,317.43	18	\$19.94	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,399.15	10	\$10.58	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	7,624.92	15	\$5.31	3%	at stock turnover	\$0.00	0	0	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	777.11	10	\$5.17	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,317.43	18	\$21.94	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,399.15	10	\$12.69	3%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	Existing	3,730.00	23	\$285,611.11	2%	at stock turnover	\$1.82	1	1	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	20,365.31	10	\$15,000.00	15%	35%	\$0.08	8	8	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	271,652.06	15	\$3,570.00	15%	25%	\$0.00	42	42	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	34,283.01	15	\$31,750.00	20%	65%	\$0.07	31	32	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	Existing	3,869.25	23	\$135,994.47	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	3,597.93	18	\$60.00	15%	25%	\$0.00	1	1	BEST Simulation
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	139,613.20	45	\$136,000.00	15%	35%	\$0.07	57	58	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	1,655.16	20	\$820.00	15%	35%	\$0.01	1	1	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	33,356.73	45	\$104,000.00	15%	35%	\$0.20	13	14	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	26,404.93	20	\$35,000.00	15%	50%	\$0.10	18	19	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	66,558.03	45	\$77,100.00	15%	35%	\$0.10	26	27	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	39,741.62	3	\$61,000.00	10%	75%	\$0.38	50	53	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	Existing	0.00	14	\$80,910.00	3%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	28,760.38	3	\$31,750.00	3%	11%	\$0.25	4	5	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	176,830.34	20	\$400,000.00	10%	15%	\$0.15	7	7	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	New	4,982.61	23	\$287,289.23	2%	at stock turnover	\$1.79	1	1	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	New	36,682.06	3	\$96,000.00	10%	75%	\$0.63	18	18	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	19,230.61	10	\$15,000.00	15%	50%	\$0.09	5	5	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	271,697.70	15	\$3,570.00	15%	25%	\$0.00	16	16	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	New	33,967.92	15	\$31,750.00	20%	65%	\$0.08	12	12	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	New	12,972.52	23	\$100,006.53	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	1,848.77	18	\$50.00	15%	25%	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	133,985.72	45	\$136,000.00	15%	50%	\$0.09	36	36	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	-2,876.63	20	\$820.00	15%	25%	\$0.04	0	0	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	30,986.59	45	\$104,000.00	15%	50%	\$0.21	8	8	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	24,838.36	20	\$35,000.00	15%	50%	\$0.11	7	7	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	40,938.14	45	\$77,100.00	15%	50%	\$0.15	11	11	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	New	0.00	14	\$80,910.00	6%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	26,546.14	3	\$31,750.00	3%	11%	\$0.28	2	2	BEST Simulation
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	2,913.42	15	\$31,750.00	20%	65%	\$0.07	26	40	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,653.92	15	-\$85.15	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	2,108.72	15	\$674.57	100%	at stock turnover	\$0.01	568	528	EIA 2011
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	8,763.39	5	\$41,300.00	5%	15%	\$0.76	5	11	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	Existing	13,852.56	5	\$8,780.00	15%	50%	\$0.12	31	59	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	15,839.17	12	\$40,000.00	3%	25%	\$0.24	65	128	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	Existing	2,377.43	16	\$5,530.00	1%	3%	\$0.18	1	2	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	17,032.98	10	\$22,890.00	7%	45%	\$0.15	87	165	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER

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Warehouse	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$24,110.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	Existing	1,039.55	5	\$11,000.00	10%	25%	\$1.35	1	2	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	100.40	15	\$18.48	100%	at stock turnover	\$0.03	442	436	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	24.12	15	\$2.76	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	2,530.93	3	\$61,000.00	10%	75%	\$0.37	30	50	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	222.56	6	\$6.16	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	181.14	15	\$112.17	100%	at stock turnover	\$0.04	97	70	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	2,197.77	3	\$31,750.00	3%	11%	\$0.25	3	8	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	13,715.82	20	\$400,000.00	10%	15%	\$0.15	5	7	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	2,245.42	3	\$96,000.00	10%	75%	\$0.63	11	17	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	2,526.50	15	\$31,750.00	20%	65%	\$0.08	9	13	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,653.92	15	-\$85.15	100%	at stock turnover	-\$0.02	1	2	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	2,108.72	15	\$674.57	100%	at stock turnover	\$0.01	308	285	EIA 2011

Measure Data and Assumptions

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Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	7,817.92	5	\$41,300.00	5%	15%	\$0.83	2	3	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	New	12,110.60	5	\$8,780.00	15%	50%	\$0.13	11	16	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	14,028.85	12	\$40,000.00	4%	25%	\$0.26	22	33	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	New	2,105.47	16	\$5,530.00	1%	3%	\$0.20	0	0	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	14,633.69	10	\$22,890.00	22%	45%	\$0.16	12	18	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$24,110.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	New	769.86	5	\$11,000.00	10%	25%	\$1.72	0	0	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	100.40	15	\$18.48	100%	at stock turnover	\$0.03	239	236	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	24.12	15	\$2.76	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	222.56	6	\$6.16	100%	at stock turnover	\$0.01	0	0	EIA 2011

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Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	181.14	15	\$112.17	100%	at stock turnover	\$0.04	53	31	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	1,949.85	3	\$31,750.00	3%	11%	\$0.28	2	2	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	311.31	7	\$1,400.00	1%	4%	\$0.43	0	0	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	Existing	4.56	7	\$30.00	1%	3%	\$1.26	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	Existing	223.25	10	\$190.00	1%	3%	\$0.13	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	Existing	0.00	13	\$0.00	50%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	Existing	2,219.79	15	\$4,110.00	15%	75%	\$0.22	7	7	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	1,387.62	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	Existing	248.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	1,738.00	3	\$31,750.00	3%	11%	\$0.25	2	2	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	365.27	7	\$1,400.00	1%	2%	\$0.39	0	0	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	New	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	New	2,219.79	15	\$4,110.00	15%	75%	\$0.22	3	3	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	New	1,387.62	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	New	248.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	1,669.50	3	\$31,750.00	3%	11%	\$0.28	1	1	BEST Simulation
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	2,807.33	6	\$21.06	100%	at stock turnover	\$0.00	10	10	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	Existing	981.80	4	\$2,650.00	10%	50%	\$0.71	25	28	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	442.16	6	\$10.96	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	488.30	6	\$33.02	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	3,019.04	5	\$4,000.00	10%	25%	\$0.30	30	32	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,142.00	6	\$6.60	77%	at stock turnover	\$0.00	6	6	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	609.72	6	\$7.80	100%	at stock turnover	\$0.00	0	1	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	4,097.31	6	\$27.36	89%	at stock turnover	\$0.00	34	35	Assumed same as Desktop
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	2,807.33	6	\$21.06	100%	at stock turnover	\$0.00	5	5	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	New	1,077.50	4	\$2,650.00	10%	50%	\$0.62	11	11	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	442.16	6	\$10.96	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	488.30	6	\$33.02	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	3,429.20	5	\$4,000.00	10%	25%	\$0.27	13	13	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,142.00	6	\$7.26	85%	at stock turnover	\$0.00	3	3	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	609.72	6	\$7.80	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	4,097.31	6	\$30.74	100%	at stock turnover	\$0.00	16	16	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	Existing	3,447.94	9	\$39.17	10%	at stock turnover	\$0.00	3	3	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	Existing	1,039.00	9	\$100.00	0%	10%	\$0.02	0	0	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$820.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$4,670.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	Existing	7,953.29	10	\$232.82	10%	at stock turnover	\$0.01	6	5	EIA 2011
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	New	3,447.94	9	\$47.00	12%	at stock turnover	\$0.00	2	2	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	New	1,039.00	9	\$100.00	0%	10%	\$0.02	0	0	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$820.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$4,670.00	0%	0%	\$10.00	0	0	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	New	7,953.29	10	\$279.39	12%	at stock turnover	\$0.01	4	4	EIA 2011
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	1,065.57	15	\$31,750.00	20%	65%	\$0.07	4	5	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	545.95	18	\$60.00	15%	25%	\$0.00	0	1	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	1,224.04	50	\$250,000.00	15%	25%	\$1.52	1	1	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	2,456.02	45	\$136,000.00	15%	35%	\$0.07	4	5	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	-98.73	20	\$820.00	15%	35%	\$0.01	0	0	BEST Simulation
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	675.78	20	\$35,000.00	15%	50%	\$0.10	2	2	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	-44.09	45	\$77,100.00	15%	35%	\$0.10	0	0	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	1,258.13	3	\$61,000.00	10%	75%	\$0.37	6	8	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	910.46	3	\$31,750.00	3%	11%	\$0.25	1	1	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	Existing	323.18	15	\$22,000.00	15%	75%	\$6.91	1	2	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	Existing	3,013.58	18	\$17,000.00	15%	35%	\$0.53	4	6	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	Existing	14,617.95	20	\$12,653.41	100%	at stock turnover	\$0.09	21	21	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	Existing	9,159.85	15	\$3,090.00	13%	50%	\$0.04	27	34	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	3,521.56	20	\$400,000.00	10%	15%	\$0.15	1	1	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	New	748.57	3	\$96,000.00	10%	75%	\$0.63	2	2	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	New	642.85	15	\$31,750.00	20%	65%	\$0.08	1	1	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	423.08	18	\$50.00	15%	25%	\$0.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	717.65	50	\$250,000.00	15%	25%	\$1.96	0	0	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	72.64	45	\$136,000.00	15%	50%	\$0.09	0	0	BEST Simulation
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	214.57	20	\$820.00	15%	25%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	405.25	20	\$35,000.00	15%	50%	\$0.11	1	1	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	32.54	45	\$77,100.00	15%	50%	\$0.15	0	0	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	541.72	3	\$31,750.00	3%	11%	\$0.28	0	0	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	New	189.48	15	\$13,000.00	15%	75%	\$6.70	0	0	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	New	1,778.02	18	\$17,000.00	15%	35%	\$0.87	1	1	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	New	12,957.97	20	\$11,664.66	100%	at stock turnover	\$0.09	6	6	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	New	5,561.29	15	\$3,090.00	19%	50%	\$0.06	6	6	BEST Simulation
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,233.17	5	\$18,000.00	3%	75%	\$1.62	12	13	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	271.96	7	\$1,400.00	1%	4%	\$0.43	0	0	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,344.12	5	\$4,000.00	1%	10%	\$0.36	2	2	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	Existing	6,508.06	5	\$1,320.00	25%	65%	\$0.05	7	8	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	Existing	840.03	15	\$1,010.00	15%	75%	\$0.13	4	4	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	Existing	105.96	15	\$30.00	15%	75%	\$0.03	0	0	DEER
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	1,506.83	15	\$4,420.00	16%	75%	\$0.31	7	7	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	Existing	5,534.58	20	\$12,500.00	1%	30%	\$0.22	12	13	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	Existing	541.61	13	\$27.66	77%	at stock turnover	\$0.01	3	3	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,331.08	5	\$18,000.00	3%	75%	\$1.62	13	13	AEG study for PN&L
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	7,838.50	20	\$400,000.00	10%	15%	\$0.15	1	1	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,172.29	5	\$18,000.00	6%	75%	\$1.63	4	4	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	264.67	7	\$1,400.00	1%	2%	\$0.39	0	0	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,356.05	5	\$4,000.00	0%	75%	\$0.36	5	5	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	New	6,490.67	5	\$1,320.00	25%	65%	\$0.05	3	3	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	New	849.25	15	\$1,010.00	15%	75%	\$0.13	1	1	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	New	106.15	15	\$30.00	15%	75%	\$0.03	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	1,520.81	15	\$4,420.00	1%	75%	\$0.31	3	3	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	New	5,572.59	20	\$12,500.00	1%	30%	\$0.22	5	5	BEST Simulation
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	New	541.61	13	\$27.66	77%	at stock turnover	\$0.01	2	2	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,258.49	5	\$18,000.00	6%	75%	\$1.63	4	5	AEG study for PN&L
Warehouse - Refrigerated	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	9,235.48	23	\$10,177.59	2%	at stock turnover	\$1.89	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	29,944.53	23	\$9,723.68	13%	at stock turnover	\$0.03	3	3	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,673.63	10	\$810.00	15%	75%	\$0.01	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,414.11	15	\$950.00	15%	75%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	639.25	15	\$2,220.00	15%	75%	\$0.34	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Warehouse - Refrigerated	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,861.77	10	\$15,000.00	15%	35%	\$0.11	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	34,171.02	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse - Refrigerated	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,038.77	15	\$31,750.00	20%	65%	\$0.09	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,325.94	15	\$1,244.70	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	48,046.64	23	\$73,549.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,428.10	18	\$60.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	27,670.99	10	\$18,240.00	18%	75%	\$0.09	2	3	DEER
Warehouse - Refrigerated	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,495.04	50	\$250,000.00	15%	25%	\$1.63	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15,955.01	45	\$136,000.00	15%	35%	\$0.09	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,054.06	20	\$820.00	15%	50%	\$0.02	0	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,399.70	45	\$104,000.00	15%	35%	\$0.26	0	0	BPA

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,108.79	20	\$35,000.00	15%	50%	\$0.13	0	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-2,389.79	45	\$77,100.00	15%	35%	\$0.13	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	19,872.81	15	\$10,437.28	1%	at stock turnover	\$0.06	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,620.59	3	\$61,000.00	10%	75%	\$0.00	2	0	6th Plan
Warehouse - Refrigerated	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	42,697.79	23	\$49,624.27	17%	at stock turnover	\$0.12	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$80,200.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,518.78	3	\$31,750.00	3%	11%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	43,781.07	23	\$13,189.94	1%	at stock turnover	\$0.03	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,626.49	10	\$810.00	15%	75%	\$0.01	0	3	DEER
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15,726.84	4	\$810.00	15%	75%	\$0.01	0	10	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,803.84	15	\$950.00	15%	75%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	536.85	15	\$4,390.00	15%	75%	\$0.71	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	27,257.13	20	\$400,000.00	10%	15%	\$0.18	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,570.77	23	\$8,816.92	2%	at stock turnover	\$1.85	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	New	24,481.14	23	\$8,544.82	13%	at stock turnover	\$0.04	2	2	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	15,077.47	10	\$810.00	15%	75%	\$0.01	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,765.00	15	\$950.00	15%	75%	\$0.05	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$2,220.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,739.96	3	\$96,000.00	10%	75%	\$0.79	1	1	6th Plan
Warehouse - Refrigerated	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,959.54	10	\$15,000.00	15%	50%	\$0.11	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	27,101.28	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse - Refrigerated	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,349.09	15	\$31,750.00	20%	65%	\$0.10	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,325.94	15	\$1,369.17	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data
Warehouse - Refrigerated	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	New	36,381.28	23	\$54,086.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,622.40	18	\$50.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	20,651.77	10	\$18,240.00	18%	75%	\$0.11	0	0	DEER
Warehouse - Refrigerated	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,603.33	50	\$250,000.00	15%	25%	\$2.27	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,102.95	45	\$136,000.00	15%	50%	\$0.11	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,219.44	20	\$820.00	15%	50%	\$0.04	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,848.43	45	\$104,000.00	15%	50%	\$0.28	0	0	BPA
Warehouse - Refrigerated	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,136.57	20	\$35,000.00	15%	50%	\$0.14	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-366.61	45	\$77,100.00	15%	50%	\$0.20	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	17,134.75	15	\$9,965.06	1%	at stock turnover	\$0.07	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	39,619.62	23	\$42,989.88	17%	at stock turnover	\$0.11	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$80,200.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,153.86	3	\$31,750.00	3%	11%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	New	36,085.20	23	\$11,590.84	1%	at stock turnover	\$0.03	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,670.26	10	\$810.00	15%	75%	\$0.01	0	1	DEER
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	10,763.67	4	\$810.00	15%	75%	\$0.02	0	2	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,309.57	15	\$950.00	15%	75%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$4,390.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	482.33	15	\$31,750.00	20%	65%	\$0.09	0	1	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,312.88	5	\$6,340.00	15%	25%	\$0.78	0	1	Illinois TRM
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	555.61	10	\$6,670.00	33%	60%	\$1.17	0	1	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,651.22	10	\$10,440.00	15%	30%	\$0.15	2	5	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	923.68	15	-\$47.56	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,177.67	15	\$376.73	100%	at stock turnover	\$0.01	9	8	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	66.58	15	\$12.25	100%	at stock turnover	\$0.03	6	6	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.00	15	\$1.83	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	442.98	3	\$61,000.00	10%	75%	\$0.46	1	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	118.37	6	\$3.28	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	96.34	15	\$59.66	100%	at stock turnover	\$0.04	8	6	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	384.66	3	\$31,750.00	3%	11%	\$0.28	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,130.79	20	\$400,000.00	10%	15%	\$0.18	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	377.91	3	\$96,000.00	10%	75%	\$0.79	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	415.70	15	\$31,750.00	20%	65%	\$0.10	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,111.74	5	\$6,340.00	15%	25%	\$0.85	0	0	Illinois TRM
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	491.02	10	\$6,670.00	44%	60%	\$1.22	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	6,561.11	10	\$10,440.00	15%	30%	\$0.16	1	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	923.68	15	-\$47.56	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,177.67	15	\$376.73	100%	at stock turnover	\$0.01	5	4	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	66.58	15	\$12.25	100%	at stock turnover	\$0.03	3	3	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.00	15	\$1.83	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	118.37	6	\$3.28	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	96.34	15	\$59.66	100%	at stock turnover	\$0.04	4	3	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	328.16	3	\$31,750.00	3%	11%	\$0.31	0	0	BEST Simulation
Warehouse - Refrigerated	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	11,835.14	15	\$123.72	41%	at stock turnover	\$0.00	1	1	Illinois TRM
Warehouse - Refrigerated	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,206.20	10	\$131.41	41%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse - Refrigerated	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,044.87	18	\$557.68	41%	at stock turnover	\$0.03	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse - Refrigerated	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,171.72	10	\$295.78	41%	at stock turnover	\$0.02	1	0	Developed from RTF "ComCookingConvectionOven" v2.0

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Warehouse - Refrigerated	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,835.14	15	\$148.46	49%	at stock turnover	\$0.00	1	1	Illinois TRM
Warehouse - Refrigerated	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,206.20	10	\$144.55	45%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse - Refrigerated	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,044.87	18	\$613.45	45%	at stock turnover	\$0.03	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse - Refrigerated	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,171.72	10	\$354.94	49%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse - Refrigerated	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,866.28	23	\$219,474.62	2%	at stock turnover	\$1.89	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15,642.21	10	\$15,000.00	15%	35%	\$0.11	1	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	208,574.13	15	\$3,570.00	15%	25%	\$0.00	3	3	Developed from RTF
Warehouse - Refrigerated	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	26,808.42	15	\$31,750.00	20%	65%	\$0.09	2	2	BEST Simulation
Warehouse - Refrigerated	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,973.28	23	\$104,503.41	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,766.63	18	\$60.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	106,161.89	45	\$136,000.00	15%	35%	\$0.09	4	4	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,271.49	20	\$820.00	15%	50%	\$0.02	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	25,620.76	45	\$104,000.00	15%	35%	\$0.26	1	1	BPA
Warehouse - Refrigerated	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	20,281.14	20	\$35,000.00	15%	50%	\$0.13	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	51,122.05	45	\$77,100.00	15%	35%	\$0.13	2	2	BEST Simulation
Warehouse - Refrigerated	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	30,524.92	3	\$61,000.00	10%	75%	\$0.46	3	66	6th Plan
Warehouse - Refrigerated	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	14	\$80,910.00	3%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	22,090.40	3	\$31,750.00	3%	11%	\$0.28	0	6	BEST Simulation
Warehouse - Refrigerated	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	136,255.49	20	\$400,000.00	10%	15%	\$0.18	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,828.83	23	\$220,764.16	2%	at stock turnover	\$1.85	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	28,265.12	3	\$96,000.00	10%	75%	\$0.79	1	1	6th Plan
Warehouse - Refrigerated	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	14,818.03	10	\$15,000.00	15%	50%	\$0.11	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	208,696.88	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Warehouse - Refrigerated	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	26,173.78	15	\$31,750.00	20%	65%	\$0.10	1	1	BEST Simulation
Warehouse - Refrigerated	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,968.59	23	\$76,848.88	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,424.37	18	\$50.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	103,241.90	45	\$136,000.00	15%	50%	\$0.11	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-2,215.12	20	\$820.00	15%	50%	\$0.04	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	23,876.51	45	\$104,000.00	15%	50%	\$0.28	1	1	BPA
Warehouse - Refrigerated	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	19,139.04	20	\$35,000.00	15%	50%	\$0.14	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	31,544.62	45	\$77,100.00	15%	50%	\$0.20	1	1	BEST Simulation
Warehouse - Refrigerated	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	14	\$80,910.00	6%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	20,454.96	3	\$31,750.00	3%	11%	\$0.31	0	2	BEST Simulation
Warehouse - Refrigerated	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,539.45	15	\$31,750.00	20%	65%	\$0.09	2	4	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,721.24	15	-\$88.62	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	2,194.55	15	\$702.02	100%	at stock turnover	\$0.01	66	61	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,152.20	5	\$34,360.00	5%	15%	\$0.66	1	1	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,291.71	5	\$3,280.00	15%	50%	\$0.05	3	6	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15,106.11	12	\$40,000.00	3%	25%	\$0.25	7	14	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,287.00	16	\$2,070.00	1%	3%	\$0.07	0	0	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16,771.47	10	\$8,550.00	25%	75%	\$0.00	7	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$9,490.00	7%	15%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	909.51	5	\$11,000.00	10%	25%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	95.06	15	\$17.49	100%	at stock turnover	\$0.03	46	46	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	22.84	15	\$2.61	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,413.90	3	\$61,000.00	10%	75%	\$0.46	3	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	184.53	6	\$5.11	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	150.19	15	\$93.00	100%	at stock turnover	\$0.04	9	6	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,096.14	3	\$31,750.00	3%	11%	\$0.28	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	12,358.39	20	\$400,000.00	10%	15%	\$0.18	1	1	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,103.67	3	\$96,000.00	10%	75%	\$0.79	1	2	6th Plan
Warehouse - Refrigerated	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,237.08	15	\$31,750.00	20%	65%	\$0.10	1	1	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,721.24	15	-\$88.62	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	2,194.55	15	\$702.02	100%	at stock turnover	\$0.01	36	33	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	7,158.78	5	\$34,360.00	5%	15%	\$0.73	0	0	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,625.29	5	\$3,280.00	15%	50%	\$0.05	1	2	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,185.70	12	\$40,000.00	4%	25%	\$0.26	2	3	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,014.46	16	\$2,070.00	1%	3%	\$0.08	0	0	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	14,769.77	10	\$8,550.00	25%	75%	\$0.00	3	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$9,490.00	7%	15%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	606.43	5	\$11,000.00	10%	25%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	95.06	15	\$17.49	100%	at stock turnover	\$0.03	25	25	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	22.84	15	\$2.61	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	184.53	6	\$5.11	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	150.19	15	\$93.00	100%	at stock turnover	\$0.04	5	3	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,832.94	3	\$31,750.00	3%	11%	\$0.31	0	0	BEST Simulation
Warehouse - Refrigerated	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,089.92	7	\$1,400.00	1%	4%	\$0.17	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15.91	7	\$30.00	1%	3%	\$0.36	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	779.44	10	\$190.00	1%	3%	\$0.04	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculatorBulkPurchasingWaterCooler.xls
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	13	\$0.00	79%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,683.52	15	\$4,110.00	15%	75%	\$0.00	4	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,387.62	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	248.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse - Refrigerated	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,454.75	3	\$31,750.00	3%	11%	\$0.28	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,278.87	7	\$1,400.00	1%	2%	\$0.15	0	0	Developed from RTF
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	13	\$0.00	95%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	7,683.52	15	\$4,110.00	15%	75%	\$0.00	2	1	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,387.62	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	New	248.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse - Refrigerated	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,184.79	3	\$31,750.00	3%	11%	\$0.31	1	1	BEST Simulation
Warehouse - Refrigerated	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,971.01	6	\$14.79	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	689.31	4	\$2,650.00	10%	50%	\$1.01	2	2	Developed from RTF
Warehouse - Refrigerated	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	310.44	6	\$7.69	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	342.83	6	\$23.18	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,119.65	5	\$4,000.00	10%	25%	\$0.43	2	1	5th Plan
Warehouse - Refrigerated	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	801.79	6	\$4.63	77%	at stock turnover	\$0.00	0	0	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	428.08	6	\$5.47	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,876.69	6	\$19.21	89%	at stock turnover	\$0.00	3	3	Assumed same as Desktop
Warehouse - Refrigerated	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,971.01	6	\$14.79	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	New	756.51	4	\$2,650.00	10%	50%	\$0.88	1	1	Developed from RTF
Warehouse - Refrigerated	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	310.44	6	\$7.69	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	342.83	6	\$23.18	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,407.62	5	\$4,000.00	10%	25%	\$0.38	1	1	5th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	801.79	6	\$5.10	85%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Warehouse - Refrigerated	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	428.08	6	\$5.47	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,876.69	6	\$21.58	100%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,812.60	9	\$1,424.51	92%	at stock turnover	\$0.02	14	13	EIA 2011
Warehouse - Refrigerated	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	288,372.91	8	\$2,540.00	13%	70%	\$0.00	168	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	19,637.54	9	\$100.00	5%	77%	\$0.00	14	11	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$2,310.00	12%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	16	\$160.00	2%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$820.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$4,670.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse - Refrigerated	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	31,861.28	10	\$8,468.20	92%	at stock turnover	\$0.08	23	20	EIA 2011
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,812.60	9	\$1,553.44	100%	at stock turnover	\$0.02	8	7	EIA 2011
Warehouse - Refrigerated	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	339,985.42	8	\$2,540.00	13%	70%	\$0.00	82	26	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	18,269.29	9	\$100.00	5%	77%	\$0.00	6	5	PacifiCorp Program Data
Warehouse - Refrigerated	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$2,310.00	12%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	16	\$160.00	2%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$820.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$4,670.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse - Refrigerated	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	New	31,861.28	10	\$9,234.67	100%	at stock turnover	\$0.08	15	14	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,888.84	15	\$31,750.00	20%	65%	\$0.09	1	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,471.48	18	\$60.00	15%	50%	\$0.00	0	0	1 BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,287.94	50	\$250,000.00	15%	25%	\$1.63	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,536.96	45	\$136,000.00	15%	35%	\$0.09	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-249.03	20	\$820.00	15%	50%	\$0.02	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,815.20	20	\$35,000.00	15%	50%	\$0.13	1	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-118.42	45	\$77,100.00	15%	35%	\$0.13	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,339.91	3	\$61,000.00	10%	75%	\$0.46	2	7	6th Plan
Warehouse - Refrigerated	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,416.94	3	\$31,750.00	3%	11%	\$0.28	0	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$150.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	868.12	15	\$22,000.00	15%	75%	\$0.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,245.99	18	\$17,000.00	15%	35%	\$0.20	1	6	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	39,399.24	20	\$34,104.26	100%	at stock turnover	\$0.09	6	6	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	24,587.10	15	\$3,090.00	13%	50%	\$0.01	8	5	BEST Simulation
Warehouse - Refrigerated	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$50.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,425.03	20	\$400,000.00	10%	15%	\$0.18	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,967.65	3	\$96,000.00	10%	75%	\$0.79	1	1	6th Plan
Warehouse - Refrigerated	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,720.48	15	\$31,750.00	20%	65%	\$0.10	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,140.31	18	\$50.00	15%	50%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,920.74	50	\$250,000.00	15%	25%	\$2.27	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	194.42	45	\$136,000.00	15%	50%	\$0.11	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	532.32	20	\$820.00	15%	50%	\$0.04	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,084.59	20	\$35,000.00	15%	50%	\$0.14	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	87.09	45	\$77,100.00	15%	50%	\$0.20	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,449.85	3	\$31,750.00	3%	11%	\$0.31	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	507.13	15	\$13,000.00	15%	75%	\$0.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,875.07	18	\$17,000.00	15%	35%	\$0.32	0	1	DEER
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	New	34,925.15	20	\$31,439.34	100%	at stock turnover	\$0.09	2	2	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	14,933.14	15	\$3,090.00	19%	50%	\$0.02	2	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$50.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,544.88	5	\$18,000.00	3%	75%	\$1.07	2	2	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	425.04	7	\$1,400.00	1%	4%	\$0.17	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse - Refrigerated	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,564.00	5	\$4,000.00	1%	10%	\$0.00	0	0	AEG study for LA Dept of Water & Power
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	9,896.84	5	\$1,320.00	25%	65%	\$0.03	1	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,277.44	15	\$1,010.00	15%	75%	\$0.00	1	0	Hawaii TRM
Warehouse - Refrigerated	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	161.13	15	\$30.00	15%	75%	\$0.02	0	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,290.99	15	\$4,420.00	16%	75%	\$0.20	1	1	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,416.47	20	\$12,500.00	1%	30%	\$0.14	2	4	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	823.63	13	\$42.06	77%	at stock turnover	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,395.99	5	\$18,000.00	3%	75%	\$1.07	2	0	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,494.17	20	\$400,000.00	10%	15%	\$0.18	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,434.49	5	\$18,000.00	6%	75%	\$1.07	1	1	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	432.96	7	\$1,400.00	1%	2%	\$0.15	0	0	Developed from RTF
Warehouse - Refrigerated	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse - Refrigerated	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,582.67	5	\$4,000.00	0%	75%	\$0.00	1	0	AEG study for LA Dept of Water & Power
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,870.39	5	\$1,320.00	25%	65%	\$0.03	0	1	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,291.45	15	\$1,010.00	15%	75%	\$0.00	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	161.43	15	\$30.00	15%	75%	\$0.02	0	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,312.58	15	\$4,420.00	1%	75%	\$0.20	1	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,514.73	20	\$12,500.00	1%	30%	\$0.14	1	2	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	New	823.63	13	\$42.06	77%	at stock turnover	\$0.01	0	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,303.42	5	\$18,000.00	6%	75%	\$1.07	1	0	AEG study for PN&L

Idaho Commercial Measure Assumptions

Table H-7 Table of Idaho Commercial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	25,467.31	23	\$317,599.66	5%	at stock turnover	\$0.11	47	41	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft College bldg.	Existing	24,700.43	23	\$52,430.42	49%	at stock turnover	\$0.22	463	467	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	17,520.83	10	\$813.00	15%	75%	\$0.01	540	604	BEST Simulation
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	4,862.66	15	\$1,110.00	15%	75%	\$0.02	147	171	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	Existing	784.62	15	\$4,557.00	15%	75%	\$0.53	22	29	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	10,612.14	15	\$23,400.00	45%	85%	\$0.68	356	425	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	Existing	14,951.41	12	\$13,500.00	15%	25%	\$0.11	150	185	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	2,669.20	10	\$4,500.00	15%	35%	\$0.05	54	61	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	Existing	4,491.79	15	\$9,525.00	20%	65%	\$0.05	208	231	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	Existing	6,215.47	15	\$28,292.03	0%	at stock turnover	\$0.56	28	27	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	22,428.49	23	\$261,047.41	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	2,066.19	18	\$120.00	15%	50%	\$0.01	75	88	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	Existing	17,875.31	10	\$37,434.00	18%	75%	\$0.26	426	541	DEER
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	4,636.01	50	\$75,000.00	15%	25%	\$0.72	44	60	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	677.20	45	\$37,881.00	15%	35%	\$0.14	14	15	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	6,163.18	20	\$246.00	15%	35%	\$0.01	130	141	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	4,416.21	45	\$20,784.00	15%	35%	\$0.09	89	101	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	2,839.89	20	\$10,500.00	15%	50%	\$0.06	101	114	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	-2,437.30	45	\$23,130.00	15%	35%	\$0.04	-50	-56	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	Existing	9,559.57	15	\$54,130.13	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	Existing	5,169.58	3	\$18,300.00	10%	75%	\$0.24	336	385	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	Existing	8,371.91	23	\$62,666.22	29%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	Existing	0.00	15	\$164,607.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	3,764.60	3	\$9,525.00	3%	29%	\$0.16	98	131	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	Existing	49,910.89	23	\$79,329.51	12%	at stock turnover	\$0.16	31	31	BEST Simulation
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	13,167.97	10	\$813.00	15%	75%	\$0.01	101	125	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	Existing	19,981.41	4	\$813.00	15%	75%	\$0.01	151	192	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	7,123.14	15	\$1,110.00	15%	75%	\$0.02	53	70	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	Existing	884.00	15	\$5,097.00	15%	75%	\$0.49	6	9	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	16,125.23	20	\$120,000.00	10%	30%	\$0.09	98	99	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	23,350.65	23	\$325,237.21	6%	at stock turnover	\$0.12	23	19	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per 30,000 sqft College bldg.	New	1,821.57	23	\$22,303.44	55%	at stock turnover	\$1.27	15	15	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	12,015.48	10	\$813.00	15%	75%	\$0.01	108	108	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	4,937.62	15	\$1,110.00	15%	75%	\$0.02	44	44	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	New	476.42	15	\$4,557.00	15%	75%	\$0.85	4	4	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	New	3,040.33	3	\$28,800.00	10%	75%	\$0.42	60	60	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	2,395.84	15	\$23,400.00	45%	85%	\$7.70	25	25	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	New	9,352.74	12	\$13,500.00	15%	25%	\$0.17	28	29	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	1,750.95	10	\$4,500.00	15%	50%	\$0.06	19	19	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	New	2,959.15	15	\$9,525.00	20%	65%	\$0.05	41	41	BEST Simulation
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	New	6,215.47	15	\$31,121.23	0%	at stock turnover	\$0.61	11	10	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	20,579.36	23	\$267,325.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	1,230.29	18	\$120.00	15%	35%	\$0.03	7	8	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	New	11,246.63	10	\$37,434.00	18%	75%	\$0.41	31	31	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	2,963.30	50	\$75,000.00	15%	25%	\$1.15	9	9	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	-1,069.13	45	\$37,881.00	15%	50%	\$0.27	-11	-11	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	3,719.71	20	\$246.00	15%	50%	\$0.01	40	40	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	2,780.59	45	\$20,784.00	15%	50%	\$0.10	30	30	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	1,855.64	20	\$10,500.00	15%	50%	\$0.07	20	20	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	-116.08	45	\$23,130.00	15%	50%	\$1.03	-1	-1	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	New	8,626.93	15	\$55,865.30	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	New	7,672.43	23	\$64,173.20	33%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	New	0.00	15	\$164,607.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	New	2,357.42	3	\$9,525.00	3%	29%	\$0.19	24	24	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	New	35,613.42	23	\$67,492.13	14%	at stock turnover	\$0.19	11	11	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	7,135.34	10	\$813.00	15%	75%	\$0.02	17	17	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	New	10,917.71	4	\$813.00	15%	75%	\$0.02	26	26	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	5,787.90	15	\$1,110.00	15%	75%	\$0.02	14	14	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	New	456.68	15	\$5,097.00	15%	75%	\$0.95	1	1	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	154.49	15	\$9,525.00	20%	65%	\$0.05	16	25	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	409.00	5	\$11,814.00	15%	25%	\$4.91	9	18	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	319.07	10	\$3,333.00	33%	60%	\$1.11	19	38	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	Existing	2,397.28	10	\$5,220.00	15%	30%	\$0.25	81	154	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	150.99	15	-\$10.14	100%	at stock turnover	-\$0.03	1	1	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	192.51	15	\$80.32	100%	at stock turnover	\$0.01	156	147	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	42.62	15	\$10.23	100%	at stock turnover	\$0.00	530	521	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	10.24	15	\$1.53	100%	at stock turnover	\$0.00	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	151.76	3	\$18,300.00	10%	75%	\$0.24	23	35	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	36.78	6	\$1.33	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	29.94	15	\$24.18	100%	at stock turnover	\$0.05	5	4	EIA 2011
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	132.61	3	\$9,525.00	3%	29%	\$0.16	8	16	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	738.46	20	\$120,000.00	10%	30%	\$0.09	8	12	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	New	117.12	3	\$28,800.00	10%	75%	\$0.42	4	6	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	133.69	15	\$9,525.00	20%	65%	\$0.05	3	5	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	New	340.12	5	\$11,814.00	15%	25%	\$5.31	2	3	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	300.90	10	\$3,333.00	44%	60%	\$1.05	3	4	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	New	2,020.20	10	\$5,220.00	15%	30%	\$0.27	16	24	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	150.99	15	-\$10.14	100%	at stock turnover	-\$0.03	0	0	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	192.51	15	\$80.32	100%	at stock turnover	\$0.01	49	46	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	42.62	15	\$10.23	100%	at stock turnover	\$0.00	165	164	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	10.24	15	\$1.53	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	36.78	6	\$1.33	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	29.94	15	\$24.18	100%	at stock turnover	\$0.05	2	1	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	110.33	3	\$9,525.00	3%	29%	\$0.19	2	3	BEST Simulation
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	Existing	16,955.74	15	\$91.36	21%	at stock turnover	\$0.00	101	98	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,728.07	10	\$97.04	21%	at stock turnover	\$0.01	36	31	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	Existing	2,929.61	18	\$411.81	21%	at stock turnover	\$0.02	13	13	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	Existing	3,111.34	10	\$218.41	21%	at stock turnover	\$0.01	43	38	Developed from RTF "ComCookingConvectionOven" v2.0
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	New	16,955.74	15	\$127.90	29%	at stock turnover	\$0.00	50	49	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	New	1,728.07	10	\$135.86	29%	at stock turnover	\$0.01	15	13	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	New	2,929.61	18	\$576.53	29%	at stock turnover	\$0.02	6	6	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	New	3,111.34	10	\$305.78	29%	at stock turnover	\$0.01	18	16	Developed from RTF "ComCookingConvectionOven" v2.0
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	18,618.02	23	\$43,546.79	5%	at stock turnover	\$0.11	31	27	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	-8,384.05	15	\$23,400.00	45%	85%	\$0.68	-66	-71	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	9,097.63	10	\$4,500.00	15%	35%	\$0.05	42	44	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	130,307.86	15	\$3,573.00	15%	25%	\$0.00	234	234	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Energy Management System	per 30,000 sqft College bldg.	Existing	15,314.62	15	\$9,525.00	20%	65%	\$0.05	161	166	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	33,714.99	23	\$39,255.55	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	-1,679.38	18	\$120.00	15%	50%	\$0.01	-14	-14	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	21,839.36	45	\$37,881.00	15%	35%	\$0.14	100	105	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	-1,622.92	20	\$246.00	15%	35%	\$0.01	-8	-8	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	15,032.08	45	\$20,784.00	15%	35%	\$0.09	69	73	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	11,795.73	20	\$10,500.00	15%	50%	\$0.06	96	100	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	47,547.72	45	\$23,130.00	15%	35%	\$0.04	226	230	BEST Simulation
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	Existing	17,683.10	3	\$18,300.00	10%	75%	\$0.24	262	277	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	Existing	0.00	14	\$100,317.00	3%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	12,877.95	3	\$9,525.00	3%	29%	\$0.16	76	86	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	81,271.03	20	\$120,000.00	10%	30%	\$0.09	89	89	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	18,149.00	23	\$45,980.69	6%	at stock turnover	\$0.12	15	13	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	New	16,323.76	3	\$28,800.00	10%	75%	\$0.42	58	58	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	-2,442.38	15	\$23,400.00	45%	85%	\$7.70	-5	-5	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	8,838.67	10	\$4,500.00	15%	50%	\$0.06	17	17	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	130,307.86	15	\$3,573.00	15%	25%	\$0.00	51	51	Developed from RTF
College	Heating	Energy Management System	per 30,000 sqft College bldg.	New	14,938.45	15	\$9,525.00	20%	65%	\$0.05	37	37	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	29,791.60	23	\$40,199.54	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	-1,605.13	18	\$120.00	15%	35%	\$0.03	-2	-2	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	12,348.68	45	\$37,881.00	15%	50%	\$0.27	23	24	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	-1,566.98	20	\$246.00	15%	50%	\$0.01	-3	-3	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	14,012.15	45	\$20,784.00	15%	50%	\$0.10	27	27	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	11,415.91	20	\$10,500.00	15%	50%	\$0.07	22	22	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	1,871.22	45	\$23,130.00	15%	50%	\$1.03	4	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	New	0.00	14	\$100,317.00	6%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	New	12,003.99	3	\$9,525.00	3%	29%	\$0.19	22	22	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	992.09	15	\$9,525.00	20%	65%	\$0.05	99	158	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	514.66	15	-\$34.56	100%	at stock turnover	-\$0.03	2	4	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	656.18	15	\$273.79	100%	at stock turnover	\$0.01	648	608	EIA 2011
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	5,990.68	5	\$19,590.00	5%	15%	\$0.52	41	90	Illinois TRM
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	Existing	9,613.79	5	\$1,047.00	15%	50%	\$0.02	256	478	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	5,442.63	12	\$12,000.00	3%	25%	\$0.20	251	527	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	Existing	824.22	16	\$660.00	1%	3%	\$0.06	4	8	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	5,901.16	10	\$2,730.00	7%	45%	\$0.05	343	682	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 30,000 sqft College bldg.	Existing	0.00	8	\$3,006.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	Existing	456.41	5	\$3,300.00	10%	25%	\$0.91	3	12	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	173.21	15	\$41.58	100%	at stock turnover	\$0.00	3,570	3,513	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	41.62	15	\$6.20	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	872.39	3	\$18,300.00	10%	75%	\$0.23	118	201	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	189.64	6	\$6.85	100%	at stock turnover	\$0.01	0	2	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	154.34	15	\$124.66	100%	at stock turnover	\$0.05	466	339	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	792.57	3	\$9,525.00	3%	29%	\$0.16	44	108	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	4,492.84	20	\$120,000.00	10%	30%	\$0.09	47	71	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	New	740.14	3	\$28,800.00	10%	75%	\$0.42	25	38	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	848.33	15	\$9,525.00	20%	65%	\$0.05	20	30	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	514.66	15	-\$34.56	100%	at stock turnover	-\$0.03	1	1	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	656.18	15	\$273.79	100%	at stock turnover	\$0.01	203	191	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	New	5,120.39	5	\$19,590.00	5%	15%	\$0.57	9	13	Illinois TRM
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	New	8,336.26	5	\$1,047.00	15%	50%	\$0.02	51	77	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	4,610.64	12	\$12,000.00	4%	25%	\$0.23	49	74	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	New	722.45	16	\$660.00	1%	3%	\$0.07	1	1	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	New	5,020.89	10	\$2,730.00	22%	45%	\$0.06	28	42	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft College bldg.	New	0.00	8	\$3,006.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	New	302.45	5	\$3,300.00	10%	25%	\$1.58	1	1	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	173.21	15	\$41.58	100%	at stock turnover	\$0.00	1,113	1,103	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	41.62	15	\$6.20	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	189.64	6	\$6.85	100%	at stock turnover	\$0.01	0	1	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	154.34	15	\$124.66	100%	at stock turnover	\$0.05	147	86	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	671.41	3	\$9,525.00	3%	29%	\$0.19	12	18	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	418.49	7	\$1,398.00	1%	4%	\$0.12	2	2	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	Existing	6.07	7	\$30.00	1%	3%	\$0.94	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	Existing	299.30	10	\$195.00	1%	3%	\$0.10	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	Existing	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	Existing	608.27	15	\$96.00	15%	75%	\$0.02	38	38	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	Existing	796.06	10	\$184.41	36%	at stock turnover	\$0.03	26	24	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	Existing	285.67	10	\$350.37	90%	at stock turnover	\$0.18	23	21	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	Existing	11.06	5	\$60.00	15%	75%	\$1.12	1	1	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	404.37	3	\$9,525.00	3%	29%	\$0.16	43	41	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	418.53	7	\$1,398.00	1%	2%	\$0.12	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	New	6.13	7	\$3.00	1%	3%	\$0.09	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	New	608.27	15	\$96.00	15%	75%	\$0.02	9	9	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	New	796.06	10	\$221.29	43%	at stock turnover	\$0.04	9	9	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	New	285.67	10	\$388.00	100%	at stock turnover	\$0.20	8	7	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	New	10.58	5	\$60.00	15%	75%	\$1.13	0	0	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	New	377.76	3	\$9,525.00	3%	29%	\$0.19	13	12	BEST Simulation
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	5,194.75	6	\$38.98	100%	at stock turnover	\$0.00	210	221	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	Existing	724.94	4	\$795.00	10%	50%	\$0.30	217	253	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	Existing	306.82	6	\$7.60	100%	at stock turnover	\$0.01	12	13	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	Existing	903.56	6	\$61.09	100%	at stock turnover	\$0.01	15	15	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	Existing	2,214.26	5	\$1,200.00	10%	25%	\$0.13	259	290	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	Existing	264.15	6	\$1.98	100%	at stock turnover	\$0.00	19	21	Assumed same as Desktop
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,410.31	6	\$18.03	100%	at stock turnover	\$0.00	13	14	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	Existing	758.17	6	\$5.69	100%	at stock turnover	\$0.00	80	82	Assumed same as Desktop
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	New	5,194.75	6	\$38.98	100%	at stock turnover	\$0.00	61	61	ENERGY STAR Calculator
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	New	689.15	4	\$795.00	10%	50%	\$0.30	47	50	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	New	306.82	6	\$7.60	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	New	903.56	6	\$61.09	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	New	2,146.67	5	\$1,200.00	10%	25%	\$0.13	55	58	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	New	264.15	6	\$1.98	100%	at stock turnover	\$0.00	6	6	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	New	1,410.31	6	\$18.03	100%	at stock turnover	\$0.00	3	3	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	New	758.17	6	\$5.69	100%	at stock turnover	\$0.00	21	20	Assumed same as Desktop
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	Existing	645.44	9	\$19.31	27%	at stock turnover	\$0.00	5	5	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	Existing	1,754.25	8	\$2,544.00	0%	25%	\$0.25	14	14	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	Existing	1,190.00	9	\$105.00	0%	25%	\$0.01	5	5	PacificCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	Existing	216.88	15	\$315.00	0%	25%	\$0.17	8	8	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	Existing	425.84	15	\$5,376.00	0%	25%	\$1.40	15	17	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	Existing	379.00	4	\$4,524.00	0%	25%	\$3.39	1	1	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	Existing	1,488.83	10	\$114.78	27%	at stock turnover	\$0.02	36	31	EIA 2011
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	New	645.44	9	\$27.03	37%	at stock turnover	\$0.01	2	2	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	New	1,755.35	8	\$2,544.00	0%	25%	\$0.25	4	4	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	New	1,190.00	9	\$105.00	0%	25%	\$0.01	1	1	PacifiCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	New	212.48	15	\$315.00	0%	25%	\$0.17	2	2	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	New	417.71	15	\$5,376.00	0%	25%	\$1.43	5	5	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	New	379.50	4	\$4,524.00	0%	25%	\$3.39	0	0	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	New	1,488.83	10	\$160.70	37%	at stock turnover	\$0.02	16	15	EIA 2011
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

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College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	Existing	2,006.57	15	\$9,525.00	20%	65%	\$0.05	81	107	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	1,098.28	18	\$120.00	15%	50%	\$0.01	37	51	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	2,290.41	50	\$75,000.00	15%	25%	\$0.72	20	32	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	1,272.57	20	\$10,500.00	15%	50%	\$0.06	39	53	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	446.28	45	\$23,130.00	15%	35%	\$0.04	8	11	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	Existing	2,326.59	3	\$18,300.00	10%	75%	\$0.24	131	179	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	1,694.14	3	\$9,525.00	3%	29%	\$0.16	38	69	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	Existing	604.74	15	\$6,600.00	15%	75%	\$1.13	31	43	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	Existing	5,779.98	18	\$5,100.00	15%	35%	\$0.09	102	137	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	Existing	28,013.86	20	\$51,019.82	100%	at stock turnover	\$0.19	141	143	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	Existing	17,100.82	15	\$3,831.00	13%	50%	\$0.03	602	742	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	7,471.80	20	\$120,000.00	10%	30%	\$0.09	38	39	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	New	1,504.70	3	\$28,800.00	10%	75%	\$0.42	25	25	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	0.00	15	\$23,400.00	45%	85%	\$10.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	New	1,362.32	15	\$9,525.00	20%	65%	\$0.05	16	16	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	755.11	18	\$120.00	15%	35%	\$0.03	4	4	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	1,460.50	50	\$75,000.00	15%	25%	\$1.15	4	4	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	0.00	45	\$37,881.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	859.83	20	\$10,500.00	15%	50%	\$0.07	8	8	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	-19.19	45	\$23,130.00	15%	50%	\$1.03	0	0	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

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College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	New	1,095.79	3	\$9,525.00	3%	29%	\$0.19	10	10	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	New	389.24	15	\$3,900.00	15%	75%	\$0.98	6	6	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	New	3,762.11	18	\$5,100.00	15%	35%	\$0.13	19	19	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	New	28,404.58	20	\$51,024.58	100%	at stock turnover	\$0.19	18	18	BEST Simulation
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	New	11,787.20	15	\$3,831.00	19%	50%	\$0.04	93	93	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	6,095.69	5	\$5,400.00	3%	75%	\$0.19	132	142	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	1,562.49	7	\$1,398.00	1%	4%	\$0.12	1	1	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	Existing	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	Existing	6,545.98	5	\$1,200.00	1%	10%	\$0.04	18	19	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	Existing	16,904.60	5	\$993.00	25%	65%	\$0.01	78	79	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

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College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	Existing	2,343.72	15	\$66.00	15%	25%	\$0.00	7	7	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	Existing	173.60	15	\$9.00	15%	75%	\$0.01	3	3	DEER
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	Existing	4,096.73	15	\$2,421.00	16%	75%	\$0.07	74	77	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	Existing	12,973.89	20	\$37,500.00	1%	30%	\$0.25	111	123	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	Existing	1,407.90	13	\$122.88	35%	at stock turnover	\$0.01	30	29	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	6,365.21	5	\$5,400.00	3%	75%	\$0.19	140	146	AEG study for PN&L
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	19,227.81	20	\$120,000.00	10%	30%	\$0.09	26	26	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	5,967.55	5	\$5,400.00	6%	75%	\$0.19	28	28	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	1,471.18	7	\$1,398.00	1%	2%	\$0.12	0	0	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	New	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	New	6,618.09	5	\$1,200.00	0%	75%	\$0.04	34	34	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	New	16,860.29	5	\$993.00	25%	65%	\$0.01	17	17	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	New	2,337.18	15	\$66.00	15%	25%	\$0.00	2	2	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	New	173.93	15	\$9.00	15%	75%	\$0.01	1	1	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	New	3,988.00	15	\$2,421.00	1%	75%	\$0.07	20	20	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	New	12,266.12	20	\$37,500.00	1%	30%	\$0.25	24	24	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	New	1,407.90	13	\$122.88	35%	at stock turnover	\$0.01	10	9	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	5,739.59	5	\$5,400.00	6%	75%	\$0.19	27	27	AEG study for PN&L
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	360,197.57	23	\$575,423.33	8%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	Existing	211,348.23	23	\$88,524.30	19%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$4,070.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$10,815.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$4,350.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$105,000.00	10%	75%	\$10.00	0	0	E3T Website
Data Center	Cooling	De-stratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	Existing	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$17,860.00	15%	25%	\$10.00	0	0	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	Existing	88,133.96	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	317,748.00	23	\$473,553.21	7%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	0.00	18	\$115.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$35,715.00	18%	75%	\$10.00	0	0	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	0.00	50	\$125,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$63,135.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$410.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$34,640.00	15%	35%	\$10.00	0	0	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	Existing	135,576.81	15	\$87,791.35	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	Existing	282,391.60	23	\$590,344.88	45%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$157,050.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	Existing	335,755.74	23	\$133,941.11	19%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$4,070.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$4,070.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$10,815.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$49,705.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	297,573.79	23	\$491,678.96	9%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	New	192,315.77	23	\$72,949.24	18%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	0.00	10	\$4,070.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	0.00	15	\$10,815.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$4,350.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	15	\$105,000.00	10%	75%	\$10.00	0	0	E3T Website
Data Center	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	New	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	0.00	15	\$17,860.00	15%	25%	\$10.00	0	0	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	New	88,133.96	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	262,893.14	23	\$404,634.53	8%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	0.00	18	\$110.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	New	0.00	10	\$35,715.00	18%	75%	\$10.00	0	0	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	0.00	50	\$125,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	0.00	45	\$63,135.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	0.00	45	\$34,640.00	15%	50%	\$10.00	0	0	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	0.00	45	\$38,550.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	New	117,980.56	15	\$83,361.21	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	New	231,779.82	23	\$504,428.90	42%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	New	0.00	15	\$157,050.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	New	307,552.13	23	\$110,375.37	21%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	0.00	10	\$4,070.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	New	0.00	4	\$4,070.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	0.00	15	\$10,815.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$49,705.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$3,945.00	15%	25%	\$10.00	0	0	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$2,845.00	33%	60%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$4,455.00	15%	30%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	311.18	15	-\$13.73	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	396.74	15	\$108.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	209.36	15	\$45.08	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	48.99	15	\$4.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	33.19	6	\$0.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	27.01	15	\$14.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	0.00	5	\$3,945.00	15%	25%	\$10.00	0	0	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	0.00	10	\$2,845.00	44%	60%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	New	0.00	10	\$4,455.00	15%	30%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	311.18	15	-\$13.73	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	396.74	15	\$108.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	209.36	15	\$45.08	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	48.99	15	\$4.80	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	33.19	6	\$0.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	27.01	15	\$14.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	7,532.23	15	\$7.03	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	767.66	10	\$7.47	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,301.42	18	\$31.69	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,382.14	10	\$16.81	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	7,532.23	15	\$7.73	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	767.66	10	\$8.21	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,301.42	18	\$34.86	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,382.14	10	\$18.49	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	4,087.45	23	\$51,112.64	8%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$17,860.00	15%	25%	\$10.00	0	0	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	21,838.23	23	\$25,427.02	7%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	0.00	18	\$115.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$63,135.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$410.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$34,640.00	15%	35%	\$10.00	0	0	BPA
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	Existing	0.00	14	\$232,360.00	3%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	9,428.86	23	\$45,714.85	9%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	0.00	15	\$17,860.00	15%	25%	\$10.00	0	0	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	19,296.93	23	\$26,038.47	8%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	0.00	18	\$110.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	0.00	45	\$63,135.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	0.00	45	\$34,640.00	15%	50%	\$10.00	0	0	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	0.00	45	\$38,550.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	New	0.00	14	\$232,360.00	6%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	631.50	15	-\$27.87	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	805.15	15	\$220.77	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$52,150.00	5%	15%	\$10.00	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$3,265.00	15%	50%	\$10.00	0	0	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	12	\$20,000.00	3%	25%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	16	\$2,060.00	1%	3%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$8,520.00	7%	45%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	Existing	0.00	25	\$61,500.00	15%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$5,500.00	10%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	298.21	15	\$64.21	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	69.78	15	\$6.83	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	230.65	6	\$5.47	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	187.72	15	\$99.64	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	631.50	15	-\$27.87	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	805.15	15	\$220.77	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	0.00	5	\$52,150.00	5%	15%	\$10.00	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	New	0.00	5	\$3,265.00	15%	50%	\$10.00	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	0.00	12	\$20,000.00	4%	25%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	New	0.00	16	\$2,060.00	1%	3%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	10	\$8,520.00	22%	45%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	New	0.00	25	\$61,500.00	18%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Data Center bldg.	New	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	New	0.00	5	\$5,500.00	10%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	298.21	15	\$64.21	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	69.78	15	\$6.83	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	230.65	6	\$5.47	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	187.72	15	\$99.64	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	0.00	7	\$6,985.00	1%	4%	\$10.00	0	0	Developed from RTF
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	Existing	0.00	7	\$155.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$975.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$18,860.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	Existing	802.04	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	Existing	143.91	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	0.00	7	\$6,985.00	1%	2%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	New	0.00	7	\$10.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	New	0.00	15	\$18,860.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	New	802.04	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	New	143.91	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	New	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$500,000.00	10%	50%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$52,500.00	10%	15%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	77,241.44	6	\$579.57	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$1,325.00	10%	50%	\$10.00	0	0	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	6,082.84	6	\$150.77	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	13,435.16	6	\$908.39	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$2,000.00	10%	25%	\$10.00	0	0	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	3,142.11	6	\$9.43	40%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	16,776.01	6	\$214.49	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,127,339.34	6	\$8,458.80	100%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	New	0.00	20	\$150,000.00	10%	50%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	New	0.00	3	\$52,500.00	10%	15%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	77,241.44	6	\$579.57	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	New	0.00	4	\$1,325.00	10%	50%	\$10.00	0	0	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	6,082.84	6	\$150.77	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	13,435.16	6	\$908.39	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,000.00	10%	25%	\$10.00	0	0	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	3,142.11	6	\$10.37	44%	at stock turnover	\$0.00	0	0	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	16,776.01	6	\$214.49	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,127,339.34	6	\$8,458.80	100%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$13,155.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	Existing	292.31	9	\$1.68	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	Existing	0.00	9	\$525.00	0%	10%	\$10.00	0	0	PacificCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$34,120.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$26,880.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$16,370.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	Existing	674.26	10	\$9.97	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	New	0.00	5	\$7,735.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	New	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	New	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	New	292.31	9	\$1.84	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	New	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	New	0.00	9	\$525.00	0%	10%	\$10.00	0	0	PacificCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	New	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	New	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	New	0.00	15	\$34,120.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	New	0.00	15	\$26,880.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	New	0.00	4	\$16,370.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	New	674.26	10	\$10.96	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	0.00	18	\$115.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	0.00	50	\$125,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$63,135.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$410.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$11,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	Existing	0.00	18	\$8,500.00	15%	35%	\$10.00	0	0	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	Existing	718,715.86	20	\$710,687.71	100%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$8,875.00	13%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$48,000.00	10%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	0.00	15	\$39,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15,875.00	20%	65%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	0.00	18	\$110.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	0.00	50	\$125,000.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	0.00	45	\$63,135.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	0.00	20	\$17,500.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	0.00	45	\$38,550.00	15%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	New	0.00	15	\$6,500.00	15%	75%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	New	0.00	18	\$8,500.00	15%	35%	\$10.00	0	0	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	New	649,347.44	20	\$698,735.56	100%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	New	0.00	15	\$8,875.00	19%	50%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$9,000.00	3%	75%	\$10.00	0	0	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	0.00	7	\$6,985.00	1%	4%	\$10.00	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$5,585.00	1%	7%	\$10.00	0	0	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$2,000.00	1%	10%	\$10.00	0	0	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$550.00	25%	65%	\$10.00	0	0	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$575.00	15%	75%	\$10.00	0	0	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15.00	15%	75%	\$10.00	0	0	DEER
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$6,985.00	16%	75%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$62,500.00	1%	30%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	Existing	659.28	13	\$34.99	68%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$9,000.00	3%	75%	\$10.00	0	0	AEG study for PN&L
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	0.00	20	\$200,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	0.00	5	\$9,000.00	6%	75%	\$10.00	0	0	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	0.00	7	\$6,985.00	1%	2%	\$10.00	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	New	0.00	20	\$5,585.00	1%	8%	\$10.00	0	0	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,000.00	0%	75%	\$10.00	0	0	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	New	0.00	5	\$550.00	25%	65%	\$10.00	0	0	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	New	0.00	15	\$575.00	15%	75%	\$10.00	0	0	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	New	0.00	15	\$15.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	New	0.00	15	\$6,985.00	1%	75%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	New	0.00	20	\$62,500.00	1%	30%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	New	659.28	13	\$34.99	68%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	0.00	5	\$9,000.00	6%	75%	\$10.00	0	0	AEG study for PN&L
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	28,889.61	23	\$433,641.21	4%	at stock turnover	\$0.02	7	6	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	Existing	14,452.64	23	\$4,675.08	6%	at stock turnover	\$0.03	13	13	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	11,442.63	10	\$814.00	15%	75%	\$0.01	10	11	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	1,593.16	15	\$2,162.00	15%	75%	\$0.14	1	2	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	Existing	523.54	15	\$1,834.00	15%	75%	\$0.30	0	1	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	11,513.70	15	\$15,600.00	45%	85%	\$0.22	76	89	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	De-stratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	Existing	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	1,915.73	10	\$3,000.00	15%	35%	\$0.09	8	8	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	3,224.09	15	\$6,350.00	20%	65%	\$0.06	29	32	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	Existing	6,423.58	15	\$58,478.65	0%	at stock turnover	\$1.12	12	11	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	9,970.79	23	\$208,378.43	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	282.82	18	\$48.00	15%	25%	\$0.01	1	1	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	Existing	13,612.64	10	\$15,062.00	18%	75%	\$0.15	62	74	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	7,543.67	15	\$260.00	15%	75%	\$0.02	93	100	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	3,297.98	50	\$50,000.00	15%	25%	\$0.70	6	8	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	11,594.82	45	\$25,254.00	15%	35%	\$0.16	44	51	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	2,962.82	45	\$13,856.00	15%	35%	\$0.15	11	13	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	2,038.18	20	\$7,000.00	15%	50%	\$0.11	14	16	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	-1,723.73	45	\$15,420.00	15%	35%	\$0.11	-7	-8	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	Existing	9,881.42	15	\$6,398.61	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	3,352.92	3	\$12,200.00	10%	75%	\$0.31	40	48	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	Existing	8,650.54	23	\$85,562.61	82%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$66,228.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	2,512.69	3	\$6,350.00	4%	27%	\$0.18	11	15	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	Existing	22,800.92	23	\$7,073.60	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$2,162.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$9,942.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	10,707.01	20	\$80,000.00	10%	15%	\$0.12	7	7	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	19,385.90	23	\$359,883.23	4%	at stock turnover	\$0.03	5	5	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	New	12,825.86	23	\$4,153.19	7%	at stock turnover	\$0.03	13	13	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	9,272.75	10	\$814.00	15%	75%	\$0.01	5	5	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	1,336.79	15	\$2,162.00	15%	75%	\$0.15	1	1	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$1,834.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	New	2,012.81	3	\$19,200.00	10%	75%	\$0.59	16	16	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	4,942.75	15	\$15,600.00	45%	85%	\$0.44	21	22	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	New	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	Destratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	New	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	1,154.65	10	\$3,000.00	15%	50%	\$0.12	5	5	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,951.49	15	\$6,350.00	20%	65%	\$0.07	11	11	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	New	6,423.58	15	\$64,326.52	0%	at stock turnover	\$1.23	11	10	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	4,544.19	23	\$172,935.37	0%	at stock turnover	\$0.00	0	0	BEST Simulation

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Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	173.48	18	\$76.00	15%	25%	\$0.02	0	0	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	New	7,710.48	10	\$15,062.00	18%	75%	\$0.27	8	8	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	1,943.31	50	\$50,000.00	15%	25%	\$1.09	2	2	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	1,676.84	45	\$25,254.00	15%	50%	\$0.68	7	7	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	1,880.73	45	\$13,856.00	15%	50%	\$0.19	8	8	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	1,213.11	20	\$7,000.00	15%	50%	\$0.13	5	5	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	-75.88	45	\$15,420.00	15%	50%	\$2.67	0	0	BEST Simulation
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	New	8,598.93	15	\$6,075.73	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	New	5,517.76	23	\$71,009.27	86%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	New	0.00	15	\$66,228.00	15%	75%	\$10.00	0	0	DEER

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Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,611.17	3	\$6,350.00	4%	27%	\$0.22	6	6	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	New	20,490.27	23	\$6,283.95	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	0.00	15	\$2,162.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$9,942.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	245.35	15	\$6,350.00	20%	65%	\$0.06	5	8	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	662.86	5	\$3,928.00	15%	25%	\$1.00	3	6	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	313.12	10	\$3,458.00	33%	60%	\$1.13	4	8	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	Existing	3,891.07	10	\$5,414.00	15%	30%	\$0.16	27	51	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	308.52	15	-\$7.33	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	393.36	15	\$58.08	100%	at stock turnover	\$0.00	143	133	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	80.70	15	\$39.83	100%	at stock turnover	\$0.01	65	63	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	17.51	15	\$0.92	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	223.73	3	\$12,200.00	10%	75%	\$0.31	7	11	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	51.26	6	\$0.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	41.72	15	\$11.92	100%	at stock turnover	\$0.02	24	17	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	195.29	3	\$6,350.00	4%	27%	\$0.18	2	5	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	1,129.59	20	\$80,000.00	10%	15%	\$0.12	1	2	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	184.10	3	\$19,200.00	10%	75%	\$0.59	3	4	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	204.49	15	\$6,350.00	20%	65%	\$0.07	2	3	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	541.57	5	\$3,928.00	15%	25%	\$1.08	1	2	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	160.26	10	\$3,458.00	44%	60%	\$1.94	1	1	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	New	3,200.16	10	\$5,414.00	15%	30%	\$0.17	12	17	AEG research & analysis
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	308.52	15	-\$7.33	100%	at stock turnover	-\$0.01	0	1	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	393.36	15	\$58.08	100%	at stock turnover	\$0.00	101	94	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	80.70	15	\$39.83	100%	at stock turnover	\$0.01	46	45	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	17.51	15	\$0.92	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	51.26	6	\$0.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	41.72	15	\$11.92	100%	at stock turnover	\$0.02	18	11	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	160.69	3	\$6,350.00	4%	27%	\$0.22	1	2	BEST Simulation
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	17,343.58	15	\$243.59	55%	at stock turnover	-\$0.01	55	54	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	1,767.60	10	\$287.65	61%	at stock turnover	\$0.02	22	19	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	2,996.62	18	\$1,098.00	55%	at stock turnover	\$0.04	7	7	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	3,182.50	10	\$577.38	54%	at stock turnover	\$0.03	23	20	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	17,343.58	15	\$341.02	77%	at stock turnover	-\$0.01	63	61	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	1,767.60	10	\$402.71	85%	at stock turnover	\$0.03	20	18	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	2,996.62	18	\$1,537.20	77%	at stock turnover	\$0.06	7	7	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	3,182.50	10	\$808.34	76%	at stock turnover	\$0.04	22	20	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	3,879.12	23	\$6,375.72	4%	at stock turnover	\$0.02	1	1	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	-4,746.93	15	\$15,600.00	45%	85%	\$0.22	-6	-6	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	2,754.02	10	\$3,000.00	15%	35%	\$0.09	2	2	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	37,842.87	15	\$3,572.00	15%	25%	\$0.01	2	2	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	4,636.64	15	\$6,350.00	20%	65%	\$0.06	7	7	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	8,013.63	23	\$5,469.57	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	46.86	18	\$48.00	15%	25%	\$0.01	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	-5,663.55	15	\$260.00	15%	75%	\$0.02	-12	-12	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	673.27	45	\$25,254.00	15%	35%	\$0.16	0	0	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	4,488.07	45	\$13,856.00	15%	35%	\$0.15	3	3	BPA
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	3,570.66	20	\$7,000.00	15%	50%	\$0.11	4	4	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	13,934.86	45	\$15,420.00	15%	35%	\$0.11	10	10	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	5,359.28	3	\$12,200.00	10%	75%	\$0.31	12	12	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	Existing	0.00	14	\$93,946.00	3%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	3,866.90	3	\$6,350.00	4%	27%	\$0.18	3	3	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	24,207.50	20	\$80,000.00	10%	15%	\$0.12	2	2	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	3,532.21	23	\$5,455.82	4%	at stock turnover	\$0.03	1	1	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	New	5,022.18	3	\$19,200.00	10%	75%	\$0.59	6	6	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	-1,422.08	15	\$15,600.00	45%	85%	\$0.44	-1	-1	BEST Simulation
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	2,610.57	10	\$3,000.00	15%	50%	\$0.12	2	2	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	37,844.14	15	\$3,572.00	15%	25%	\$0.01	1	1	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	New	4,412.24	15	\$6,350.00	20%	65%	\$0.07	4	4	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	6,432.15	23	\$4,539.24	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	48.93	18	\$76.00	15%	25%	\$0.02	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	1,118.21	45	\$25,254.00	15%	50%	\$0.68	1	1	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	4,249.39	45	\$13,856.00	15%	50%	\$0.19	3	3	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	3,342.65	20	\$7,000.00	15%	50%	\$0.13	2	2	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	573.96	45	\$15,420.00	15%	50%	\$2.67	0	0	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	New	0.00	14	\$93,946.00	6%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	3,640.29	3	\$6,350.00	4%	27%	\$0.22	2	2	BEST Simulation
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,948.39	15	\$6,350.00	20%	65%	\$0.06	39	64	BEST Simulation
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,040.51	15	-\$24.73	100%	at stock turnover	-\$0.01	2	2	EIA 2011
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,326.64	15	\$195.87	100%	at stock turnover	\$0.00	427	397	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	10,537.86	5	\$22,118.00	5%	15%	\$0.33	15	32	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	Existing	16,875.83	5	\$1,550.00	15%	50%	\$0.02	91	173	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	11,591.71	12	\$8,000.00	3%	25%	\$0.06	110	230	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	Existing	1,754.69	16	\$976.00	1%	3%	\$0.04	2	4	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	12,562.71	10	\$4,042.00	7%	45%	\$0.03	151	296	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	Existing	0.00	25	\$24,600.00	15%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 20,000 sqft Grocery bldg.	Existing	0.00	8	\$4,496.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	Existing	1,402.16	5	\$2,200.00	10%	25%	\$0.20	2	7	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	302.61	15	\$149.35	100%	at stock turnover	\$0.01	1,366	1,323	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	65.67	15	\$3.46	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,841.80	3	\$12,200.00	10%	75%	\$0.31	51	87	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	261.15	6	\$3.34	100%	at stock turnover	\$0.00	0	1	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	212.55	15	\$60.75	100%	at stock turnover	\$0.02	364	264	EIA 2011
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,609.18	3	\$6,350.00	4%	27%	\$0.18	16	41	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	8,736.44	20	\$80,000.00	10%	15%	\$0.12	11	15	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	1,524.67	3	\$19,200.00	10%	75%	\$0.59	25	35	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,581.26	15	\$6,350.00	20%	65%	\$0.07	18	25	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,040.51	15	-\$24.73	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,326.64	15	\$195.87	100%	at stock turnover	\$0.00	301	282	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	8,774.64	5	\$22,118.00	5%	15%	\$0.36	7	10	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	New	13,621.60	5	\$1,550.00	15%	50%	\$0.02	41	57	Illinois TRM
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	9,849.54	12	\$8,000.00	4%	25%	\$0.07	51	72	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	New	1,478.23	16	\$976.00	1%	3%	\$0.05	1	1	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	10,270.98	10	\$4,042.00	22%	45%	\$0.04	27	39	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	New	0.00	25	\$24,600.00	18%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 20,000 sqft Grocery bldg.	New	0.00	8	\$4,496.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	New	1,175.89	5	\$2,200.00	10%	25%	\$0.22	1	2	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	302.61	15	\$149.35	100%	at stock turnover	\$0.01	976	954	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	65.67	15	\$3.46	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	261.15	6	\$3.34	100%	at stock turnover	\$0.00	0	1	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	212.55	15	\$60.75	100%	at stock turnover	\$0.02	278	160	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,338.30	3	\$6,350.00	4%	27%	\$0.22	10	14	BEST Simulation
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	96.95	7	\$1,398.00	1%	4%	\$0.77	0	0	Developed from RTF
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	Existing	1.42	7	\$30.00	1%	3%	\$4.03	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	Existing	69.33	10	\$194.00	1%	3%	\$0.41	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	Existing	0.00	13	\$0.00	35%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	Existing	1,586.04	15	\$10,756.00	15%	75%	\$0.81	8	8	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	Existing	320.82	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	Existing	57.56	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,594.52	3	\$6,350.00	4%	27%	\$0.18	14	14	BEST Simulation
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	55.40	7	\$1,398.00	1%	2%	\$1.35	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	New	0.81	7	\$2.00	1%	3%	\$0.47	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	New	0.00	13	\$0.00	42%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	New	1,586.04	15	\$10,756.00	15%	75%	\$0.81	5	5	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	New	320.82	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	New	57.56	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,543.53	3	\$6,350.00	4%	27%	\$0.22	9	9	BEST Simulation
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	745.00	6	\$5.59	100%	at stock turnover	\$0.00	6	6	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	Existing	16.21	4	\$530.00	10%	50%	\$9.00	1	1	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	146.67	6	\$2.33	64%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	129.58	6	\$8.76	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	47.64	5	\$800.00	10%	25%	\$3.88	1	1	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	378.83	6	\$2.84	100%	at stock turnover	\$0.00	6	6	Assumed same as Desktop
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	161.81	6	\$2.07	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	543.67	6	\$4.08	100%	at stock turnover	\$0.00	12	12	Assumed same as Desktop
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	New	0.00	20	\$60,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	745.00	6	\$5.59	100%	at stock turnover	\$0.00	4	4	ENERGY STAR Calculator
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	New	15.51	4	\$926.00	10%	50%	\$16.25	0	0	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	146.67	6	\$2.56	70%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	129.58	6	\$8.76	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	26.03	5	\$800.00	10%	25%	\$7.01	0	0	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	378.83	6	\$2.84	100%	at stock turnover	\$0.00	4	4	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	161.81	6	\$2.07	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	543.67	6	\$4.08	100%	at stock turnover	\$0.00	7	7	Assumed same as Desktop
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	Existing	47,686.22	5	\$2,632.00	10%	75%	\$0.26	1,409	1,437	Developed from RTF
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	Existing	283.85	8	\$196.00	10%	75%	\$0.11	8	9	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	Existing	8,262.46	5	\$2,532.00	10%	75%	\$0.07	123	124	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	Existing	939.83	9	\$104.54	99%	at stock turnover	\$0.02	22	20	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	Existing	7,800.70	8	\$2,542.00	25%	75%	\$0.06	89	89	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	Existing	1,190.00	9	\$106.00	0%	75%	\$0.01	18	18	PacifiCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$2,306.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	16	\$162.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	Existing	5,240.77	15	\$2,558.00	14%	75%	\$0.06	376	376	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	Existing	10,313.93	15	\$5,376.00	25%	75%	\$0.06	602	610	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	Existing	7,461.23	4	\$2,220.00	25%	75%	\$0.08	14	15	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	Existing	4,335.77	10	\$1,242.86	99%	at stock turnover	\$0.06	71	62	EIA 2011
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	New	48,417.71	5	\$1,548.00	10%	75%	\$0.26	725	725	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	New	165.67	8	\$196.00	10%	75%	\$0.19	2	2	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	New	8,471.52	5	\$2,532.00	10%	75%	\$0.07	63	63	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	New	939.83	9	\$105.70	100%	at stock turnover	\$0.02	15	14	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	New	4,211.78	8	\$2,542.00	35%	75%	\$0.10	19	19	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	New	1,190.00	9	\$106.00	0%	75%	\$0.01	9	9	PacificCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	New	0.00	4	\$2,306.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	New	0.00	16	\$162.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	New	5,303.83	15	\$2,558.00	0%	75%	\$0.06	235	236	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	New	10,398.93	15	\$5,376.00	35%	75%	\$0.06	246	246	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	New	7,505.23	4	\$2,220.00	35%	75%	\$0.08	6	6	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	New	4,335.77	10	\$1,256.68	100%	at stock turnover	\$0.07	60	54	EIA 2011
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$15,600.00	45%	85%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$3,000.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,581.93	15	\$6,350.00	20%	65%	\$0.06	15	17	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	331.70	18	\$48.00	15%	25%	\$0.01	1	1	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	-452.25	15	\$260.00	15%	75%	\$0.02	-6	-7	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	1,800.83	50	\$50,000.00	15%	25%	\$0.70	4	5	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	0.00	45	\$25,254.00	15%	35%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	990.14	20	\$7,000.00	15%	50%	\$0.11	7	8	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	342.14	45	\$15,420.00	15%	35%	\$0.11	1	2	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,831.18	3	\$12,200.00	10%	75%	\$0.31	25	29	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,332.13	3	\$6,350.00	4%	27%	\$0.18	6	8	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	Existing	475.40	15	\$4,400.00	15%	75%	\$0.99	6	7	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	Existing	4,574.65	18	\$3,400.00	15%	35%	\$0.08	20	22	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	Existing	7,730.70	20	\$16,362.00	100%	at stock turnover	\$0.22	27	28	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	Existing	8,607.11	15	\$3,588.00	13%	50%	\$0.05	71	76	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	6,649.02	20	\$80,000.00	10%	15%	\$0.12	4	4	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	New	1,391.58	3	\$19,200.00	10%	75%	\$0.59	11	11	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	0.00	15	\$15,600.00	45%	85%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	0.00	10	\$3,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,226.02	15	\$6,350.00	20%	65%	\$0.07	7	7	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	259.10	18	\$76.00	15%	25%	\$0.02	0	0	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	1,350.33	50	\$50,000.00	15%	25%	\$1.09	2	2	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	0.00	45	\$25,254.00	15%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	753.35	20	\$7,000.00	15%	50%	\$0.13	3	3	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	-17.68	45	\$15,420.00	15%	50%	\$2.67	0	0	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,012.37	3	\$6,350.00	4%	27%	\$0.22	4	4	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	New	359.94	15	\$2,600.00	15%	75%	\$0.75	3	3	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	New	3,530.40	18	\$3,400.00	15%	35%	\$0.10	8	8	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	New	6,034.65	20	\$14,732.99	100%	at stock turnover	\$0.25	10	10	BEST Simulation
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	New	6,008.83	15	\$3,588.00	19%	50%	\$0.07	22	22	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	3,121.13	5	\$3,600.00	3%	75%	\$0.26	28	29	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	198.96	7	\$1,398.00	1%	4%	\$0.77	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	3,208.42	5	\$800.00	1%	10%	\$0.06	4	4	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	Existing	8,285.68	5	\$1,876.00	25%	65%	\$0.06	16	16	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$1,004.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	Existing	16.67	15	\$6.00	15%	75%	\$0.04	0	0	DEER
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	2,006.86	15	\$1,976.00	16%	75%	\$0.11	15	15	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	Existing	6,363.22	20	\$25,000.00	1%	30%	\$0.34	22	24	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	Existing	688.30	13	\$33.38	63%	at stock turnover	\$0.01	6	6	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	2,988.91	5	\$3,600.00	3%	75%	\$0.26	26	28	AEG study for PN&L
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	9,422.77	20	\$80,000.00	10%	15%	\$0.12	3	3	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	2,887.84	5	\$3,600.00	6%	75%	\$0.26	12	13	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	111.01	7	\$1,398.00	1%	2%	\$1.35	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	New	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	New	3,243.63	5	\$800.00	0%	75%	\$0.06	15	15	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	New	8,263.55	5	\$1,876.00	25%	65%	\$0.06	8	8	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$1,004.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	New	8.66	15	\$6.00	15%	75%	\$0.07	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	New	1,955.26	15	\$1,976.00	1%	75%	\$0.11	9	9	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	New	6,172.54	20	\$25,000.00	1%	30%	\$0.34	11	11	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	New	688.37	13	\$32.53	63%	at stock turnover	\$0.01	4	4	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	3,002.75	5	\$3,600.00	6%	75%	\$0.26	13	13	AEG study for PN&L
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	62,264.53	23	\$87,545.21	1%	at stock turnover	\$0.03	4	4	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	Existing	39,448.78	23	\$20,829.65	17%	at stock turnover	\$0.05	40	40	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	31,820.99	10	\$813.00	15%	75%	\$0.00	54	60	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	9,782.87	15	\$1,302.00	15%	75%	\$0.01	16	19	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	Existing	980.72	15	\$3,075.00	15%	75%	\$0.29	1	2	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	6,678.78	15	\$11,700.00	45%	85%	\$0.34	33	41	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	De-stratification Fans (HVLS)	per 30,000 sqft Health bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	4,713.10	10	\$4,500.00	15%	35%	\$0.03	14	16	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	40,233.63	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	Existing	7,911.90	15	\$9,525.00	20%	65%	\$0.03	53	62	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	Existing	15,195.04	15	\$69,165.85	0%	at stock turnover	\$0.56	10	10	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	54,769.58	23	\$71,945.38	1%	at stock turnover	\$0.02	3	3	BEST Simulation
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	2,355.46	18	\$81,456.00	15%	50%	\$5.13	11	16	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	Existing	31,821.40	10	\$25,254.00	18%	75%	\$0.10	117	154	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	8,397.84	50	\$75,000.00	15%	25%	\$0.33	12	17	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	2,502.21	45	\$37,881.00	15%	35%	\$0.18	7	9	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	8,730.68	20	\$246.00	15%	35%	\$0.01	27	30	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	7,798.88	45	\$20,784.00	15%	35%	\$0.06	23	27	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	5,014.71	20	\$10,500.00	15%	50%	\$0.04	26	30	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	-4,262.52	45	\$23,130.00	15%	35%	\$0.03	-13	-15	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	Existing	23,374.59	15	\$15,135.97	0%	at stock turnover	\$0.07	1	1	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	8,608.02	3	\$18,300.00	10%	75%	\$0.14	80	97	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	Existing	48,689.73	23	\$89,823.34	11%	at stock turnover	\$0.19	13	13	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	Existing	0.00	15	\$111,045.00	15%	75%	\$10.00	0	0	DEER
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	6,725.70	3	\$9,525.00	4%	28%	\$0.08	24	34	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	Existing	69,815.67	23	\$31,516.16	69%	at stock turnover	\$0.05	32	32	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	18,549.63	10	\$813.00	15%	75%	\$0.01	109	133	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	Existing	25,616.16	4	\$813.00	15%	75%	\$0.01	148	186	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	13,798.47	15	\$1,302.00	15%	75%	\$0.01	78	102	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	Existing	964.46	15	\$5,991.00	15%	75%	\$0.53	5	8	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	30,855.32	20	\$120,000.00	10%	25%	\$0.05	58	61	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	65,683.92	23	\$74,904.35	1%	at stock turnover	\$0.03	7	6	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	New	29,624.69	23	\$13,915.12	17%	at stock turnover	\$0.05	47	47	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	19,583.39	10	\$813.00	15%	75%	\$0.01	27	27	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	6,848.99	15	\$1,302.00	15%	75%	\$0.02	9	9	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$3,075.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	New	6,311.56	3	\$28,800.00	10%	75%	\$0.26	51	54	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	Destratification Fans (HVLS)	per 30,000 sqft Health bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	3,350.06	10	\$4,500.00	15%	50%	\$0.04	15	15	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	32,148.86	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	New	5,661.10	15	\$9,525.00	20%	65%	\$0.03	32	33	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	New	15,195.04	15	\$76,082.44	0%	at stock turnover	\$0.61	13	12	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	57,881.61	23	\$61,557.02	1%	at stock turnover	\$0.02	6	6	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	New	20,928.41	10	\$25,253,196.00	18%	75%	\$122.78	24	25	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	6,162.18	50	\$75,000.00	15%	25%	\$0.49	8	8	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	780.56	45	\$37,881.00	15%	50%	\$0.11	3	4	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	5,369.02	45	\$20,784.00	15%	50%	\$0.07	24	25	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	3,550.54	20	\$10,500.00	15%	50%	\$0.05	16	16	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	-240.62	45	\$23,130.00	15%	50%	\$0.84	-1	-1	BEST Simulation
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	New	20,340.84	15	\$14,372.18	0%	at stock turnover	\$0.08	1	1	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	New	51,509.39	23	\$76,853.53	11%	at stock turnover	\$0.16	22	22	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	New	0.00	15	\$56,802.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	New	4,600.13	3	\$9,525.00	4%	28%	\$0.11	18	19	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	New	53,044.30	23	\$21,054.19	69%	at stock turnover	\$0.04	554	553	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	12,585.53	10	\$813.00	15%	75%	\$0.01	61	64	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	New	17,441.23	4	\$813.00	15%	75%	\$0.01	84	88	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	9,572.66	15	\$1,302.00	15%	75%	\$0.01	46	48	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$5,991.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	134.13	15	\$9,525.00	20%	65%	\$0.03	2	3	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	362.45	5	\$2,142.00	15%	25%	\$1.00	1	2	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	21.83	10	\$1,305.00	33%	60%	\$6.13	0	0	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	Existing	2,109.86	10	\$2,043.00	15%	30%	\$0.11	11	20	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	428.61	15	-\$13.24	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	546.47	15	\$104.89	100%	at stock turnover	\$0.00	61	57	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	79.84	15	\$16.13	100%	at stock turnover	\$0.01	23	22	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	18.21	15	\$1.25	100%	at stock turnover	\$0.01	0	0	EIA 2011
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	122.33	3	\$18,300.00	10%	75%	\$0.13	3	4	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	71.65	6	\$1.19	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	58.31	15	\$21.67	100%	at stock turnover	\$0.02	4	3	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	115.14	3	\$9,525.00	4%	28%	\$0.08	1	2	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	599.48	20	\$120,000.00	10%	25%	\$0.05	2	3	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	96.01	3	\$28,800.00	10%	75%	\$0.26	2	2	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	108.53	15	\$9,525.00	20%	65%	\$0.03	1	2	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	282.43	5	\$2,142.00	15%	25%	\$1.12	1	1	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	25.31	10	\$1,305.00	44%	60%	\$4.61	0	0	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	New	1,655.73	10	\$2,043.00	15%	30%	\$0.12	6	9	AEG research & analysis
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	428.61	15	-\$13.24	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	546.47	15	\$104.89	100%	at stock turnover	\$0.00	61	57	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	79.84	15	\$16.13	100%	at stock turnover	\$0.01	23	22	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	18.21	15	\$1.25	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	71.65	6	\$1.19	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	58.31	15	\$21.67	100%	at stock turnover	\$0.02	4	3	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	90.36	3	\$9,525.00	4%	28%	\$0.11	1	1	BEST Simulation
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	44,515.46	15	\$609.26	53%	at stock turnover	-\$0.01	99	97	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	4,536.86	10	\$976.74	81%	at stock turnover	\$0.03	53	46	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	7,691.37	18	\$2,746.31	53%	at stock turnover	\$0.04	13	13	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	8,168.48	10	\$1,898.77	70%	at stock turnover	\$0.03	56	48	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	New	44,515.46	15	\$852.96	75%	at stock turnover	-\$0.01	160	156	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	New	4,536.86	10	\$1,210.34	100%	at stock turnover	\$0.04	62	56	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	New	7,691.37	18	\$3,844.83	75%	at stock turnover	\$0.05	18	18	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	New	8,168.48	10	\$2,658.27	98%	at stock turnover	\$0.05	73	66	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	28,102.35	23	\$27,929.27	1%	at stock turnover	\$0.03	2	2	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	-4,044.52	15	\$11,700.00	45%	85%	\$0.34	-1	-1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	13,794.61	10	\$4,500.00	15%	35%	\$0.03	2	2	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	216,060.80	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	Existing	23,539.11	15	\$9,525.00	20%	65%	\$0.03	6	6	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	51,830.96	23	\$23,818.44	1%	at stock turnover	\$0.02	3	3	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	-4,652.38	18	\$81,456.00	15%	50%	\$5.21	-1	-1	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	14,477.18	45	\$37,881.00	15%	35%	\$0.18	2	2	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	-6,979.88	20	\$246.00	15%	35%	\$0.01	-1	-1	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	22,793.44	45	\$20,784.00	15%	35%	\$0.06	3	3	BPA
Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	17,885.82	20	\$10,500.00	15%	50%	\$0.04	4	4	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	71,375.33	45	\$23,130.00	15%	35%	\$0.03	8	9	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	27,004.81	3	\$18,300.00	10%	75%	\$0.14	10	10	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	Existing	0.00	14	\$72,789.00	3%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	19,652.83	3	\$9,525.00	4%	28%	\$0.08	3	3	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	108,690.04	20	\$120,000.00	10%	25%	\$0.05	7	7	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	12,609.49	23	\$24,639.62	1%	at stock turnover	\$0.03	1	1	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	New	21,918.45	3	\$28,800.00	10%	75%	\$0.26	6	6	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	11,820.74	10	\$4,500.00	15%	50%	\$0.04	2	2	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	216,060.80	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	New	19,978.67	15	\$9,525.00	20%	65%	\$0.03	4	4	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	44,562.86	23	\$20,379.27	1%	at stock turnover	\$0.02	4	4	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	26,128.93	45	\$37,881.00	15%	50%	\$0.11	4	4	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	18,906.60	45	\$20,784.00	15%	50%	\$0.07	3	3	BPA

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Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	15,267.45	20	\$10,500.00	15%	50%	\$0.05	2	2	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	2,512.50	45	\$23,130.00	15%	50%	\$0.84	0	0	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	New	0.00	14	\$72,789.00	6%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	New	16,196.79	3	\$9,525.00	4%	28%	\$0.11	2	2	BEST Simulation
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	2,428.38	15	\$9,525.00	20%	65%	\$0.03	35	57	BEST Simulation
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	605.55	15	-\$18.71	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	772.07	15	\$148.19	100%	at stock turnover	\$0.00	149	139	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	13,365.10	5	\$41,922.00	5%	15%	\$0.49	14	30	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	Existing	21,430.74	5	\$2,823.00	15%	50%	\$0.02	85	158	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	13,452.96	12	\$12,000.00	3%	25%	\$0.08	90	195	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	Existing	2,019.25	16	\$1,779.00	1%	3%	\$0.07	1	3	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	14,446.18	10	\$7,359.00	7%	45%	\$0.05	122	250	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	Existing	0.00	25	\$18,450.00	15%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft Health bldg.	Existing	0.00	8	\$8,100.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	Existing	2,657.27	5	\$3,300.00	10%	25%	\$0.16	3	10	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	228.30	15	\$46.13	100%	at stock turnover	\$0.01	1,268	1,220	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	52.06	15	\$3.57	100%	at stock turnover	\$0.01	0	1	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	2,139.71	3	\$18,300.00	10%	75%	\$0.13	42	73	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	219.86	6	\$3.65	100%	at stock turnover	\$0.00	0	2	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	178.94	15	\$66.49	100%	at stock turnover	\$0.02	467	339	EIA 2011
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	1,868.15	3	\$9,525.00	4%	28%	\$0.08	14	37	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	11,083.75	20	\$120,000.00	10%	25%	\$0.05	41	59	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	1,765.72	3	\$28,800.00	10%	75%	\$0.26	28	41	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	2,006.26	15	\$9,525.00	20%	65%	\$0.03	22	32	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	605.55	15	-\$18.71	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	772.07	15	\$148.19	100%	at stock turnover	\$0.00	149	140	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	11,086.25	5	\$41,922.00	5%	15%	\$0.53	9	13	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	New	17,860.12	5	\$2,823.00	15%	50%	\$0.03	53	75	Illinois TRM
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	11,104.67	12	\$12,000.00	4%	25%	\$0.09	56	81	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	New	1,666.59	16	\$1,779.00	1%	3%	\$0.07	1	1	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	New	11,577.30	10	\$7,359.00	22%	45%	\$0.06	30	43	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	New	0.00	25	\$18,450.00	18%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft Health bldg.	New	0.00	8	\$8,100.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	New	2,061.72	5	\$3,300.00	10%	25%	\$0.19	2	4	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	228.30	15	\$46.13	100%	at stock turnover	\$0.01	1,274	1,240	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	52.06	15	\$3.57	100%	at stock turnover	\$0.01	0	1	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	219.86	6	\$3.65	100%	at stock turnover	\$0.00	0	2	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	178.94	15	\$66.49	100%	at stock turnover	\$0.02	471	269	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	1,544.19	3	\$9,525.00	4%	28%	\$0.11	12	17	BEST Simulation
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	294.04	7	\$1,398.00	1%	4%	\$0.17	0	0	Developed from RTF
Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	Existing	4.31	7	\$30.00	1%	3%	\$1.33	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	Existing	210.27	10	\$195.00	1%	3%	\$0.14	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	Existing	0.00	13	\$0.00	74%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	Existing	1,837.89	15	\$7,716.00	15%	75%	\$0.50	14	14	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	Existing	481.23	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	Existing	86.35	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	3,664.50	3	\$9,525.00	4%	28%	\$0.08	31	29	BEST Simulation
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	564.46	7	\$1,398.00	1%	2%	\$0.15	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	New	8.34	7	\$3.00	1%	3%	\$0.07	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	New	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	New	1,837.89	15	\$7,716.00	15%	75%	\$0.50	12	12	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	New	481.23	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	New	86.35	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	New	3,434.18	3	\$9,525.00	4%	28%	\$0.11	29	28	BEST Simulation
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	5,888.68	6	\$44.18	100%	at stock turnover	\$0.00	35	37	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	Existing	110.07	4	\$795.00	10%	50%	\$2.02	5	6	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	463.74	6	\$11.49	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	1,024.26	6	\$69.25	100%	at stock turnover	\$0.01	2	3	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	323.98	5	\$1,200.00	10%	25%	\$0.87	6	6	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	598.86	6	\$4.49	100%	at stock turnover	\$0.00	7	7	Assumed same as Desktop
Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	1,278.96	6	\$16.35	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	859.45	6	\$6.45	100%	at stock turnover	\$0.00	13	14	Assumed same as Desktop
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	New	5,888.68	6	\$44.18	100%	at stock turnover	\$0.00	33	32	ENERGY STAR Calculator
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	New	203.71	4	\$795.00	10%	50%	\$1.07	7	7	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	New	463.74	6	\$11.49	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	New	1,024.26	6	\$69.25	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	New	605.27	5	\$1,200.00	10%	25%	\$0.46	7	8	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	New	598.86	6	\$4.49	100%	at stock turnover	\$0.00	6	6	Assumed same as Desktop

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Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	New	1,278.96	6	\$16.35	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	New	859.45	6	\$6.45	100%	at stock turnover	\$0.00	11	11	Assumed same as Desktop
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	Existing	1,066.12	9	\$108.39	90%	at stock turnover	\$0.02	4	4	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	Existing	362.07	8	\$2,544.00	0%	25%	\$1.20	1	1	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	Existing	1,190.00	9	\$105.00	0%	25%	\$0.01	3	3	PacifiCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	Existing	335.82	15	\$15,228.00	0%	25%	\$5.04	6	7	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	Existing	692.25	15	\$5,376.00	0%	25%	\$0.88	13	14	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	Existing	645.10	4	\$1,047.00	0%	25%	\$0.48	1	1	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	Existing	2,459.19	10	\$644.35	90%	at stock turnover	\$0.06	32	28	EIA 2011
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	New	1,066.12	9	\$119.23	99%	at stock turnover	\$0.02	4	4	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	New	709.18	8	\$2,544.00	0%	25%	\$0.62	2	2	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	New	1,190.00	9	\$105.00	0%	25%	\$0.01	2	2	PacificCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	New	328.14	15	\$15,228.00	0%	25%	\$5.14	5	5	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	New	674.31	15	\$5,376.00	0%	25%	\$0.90	10	10	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	New	644.75	4	\$1,047.00	0%	25%	\$0.48	1	1	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	New	2,459.19	10	\$708.78	99%	at stock turnover	\$0.06	37	34	EIA 2011
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	0.00	15	\$11,700.00	45%	85%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	Existing	6,003.61	15	\$9,525.00	20%	65%	\$0.03	37	47	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	2,914.73	18	\$81,456.00	15%	50%	\$5.15	13	21	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	6,929.15	50	\$75,000.00	15%	25%	\$0.33	9	14	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	3,803.58	20	\$10,500.00	15%	50%	\$0.04	18	23	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	1,321.81	45	\$23,130.00	15%	35%	\$0.03	4	5	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	7,040.58	3	\$18,300.00	10%	75%	\$0.14	62	80	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	5,123.28	3	\$9,525.00	4%	28%	\$0.08	17	27	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	Existing	1,829.43	15	\$6,600.00	15%	75%	\$0.38	15	19	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	Existing	17,742.92	18	\$5,100.00	15%	35%	\$0.03	49	62	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	Existing	69,089.48	20	\$47,212.85	100%	at stock turnover	\$0.07	25	25	BEST Simulation

Measure Data and Assumptions

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Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	Existing	51,796.07	15	\$2,781.00	13%	50%	\$0.01	283	333	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	18,527.29	20	\$120,000.00	10%	25%	\$0.05	34	34	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	New	3,749.87	3	\$28,800.00	10%	75%	\$0.26	30	30	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	New	3,378.09	15	\$9,525.00	20%	65%	\$0.03	19	19	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	3,639.02	50	\$75,000.00	15%	25%	\$0.49	4	4	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	1,317.61	45	\$37,881.00	15%	50%	\$0.11	6	6	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	2,132.07	20	\$10,500.00	15%	50%	\$0.05	9	9	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	-47.65	45	\$23,130.00	15%	50%	\$0.84	0	0	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

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Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	New	2,741.26	3	\$9,525.00	4%	28%	\$0.11	10	10	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	New	970.00	15	\$3,900.00	15%	75%	\$0.40	7	7	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	New	9,411.52	18	\$5,100.00	15%	35%	\$0.05	23	23	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	New	51,565.09	20	\$37,004.45	100%	at stock turnover	\$0.07	10	10	BEST Simulation
Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	New	29,229.10	15	\$2,781.00	19%	50%	\$0.01	109	109	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	12,897.09	5	\$5,400.00	3%	75%	\$0.09	35	38	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	997.23	7	\$1,398.00	1%	4%	\$0.17	0	0	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	Existing	78,303.24	20	\$1,116.00	0%	1%	\$0.00	2	2	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	Existing	13,776.56	5	\$1,200.00	1%	10%	\$0.02	5	5	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	Existing	35,833.84	5	\$993.00	25%	65%	\$0.01	21	21	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	Existing	4,623.92	15	\$600.00	15%	50%	\$0.01	6	6	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	Existing	117.83	15	\$9.00	15%	75%	\$0.01	0	0	DEER
Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	Existing	8,615.81	15	\$2,421.00	16%	75%	\$0.03	20	20	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	Existing	29,782.00	20	\$12,501.00	1%	30%	\$0.04	33	35	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	Existing	2,986.37	13	\$89.39	22%	at stock turnover	\$0.00	8	8	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	12,355.05	5	\$5,400.00	3%	75%	\$0.09	33	37	AEG study for PN&L
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	39,040.86	20	\$120,000.00	10%	25%	\$0.05	16	16	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	11,760.51	5	\$5,400.00	6%	75%	\$0.09	22	22	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	957.27	7	\$1,398.00	1%	2%	\$0.15	0	0	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	New	78,077.04	20	\$1,116.00	0%	1%	\$0.00	2	2	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	New	13,932.62	5	\$1,200.00	0%	75%	\$0.02	28	28	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	New	35,735.83	5	\$993.00	25%	65%	\$0.01	15	15	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	New	4,674.41	15	\$600.00	15%	50%	\$0.01	4	4	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	New	119.66	15	\$9.00	15%	75%	\$0.01	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	New	8,399.45	15	\$2,421.00	1%	75%	\$0.03	17	17	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	New	28,912.96	20	\$12,501.00	1%	30%	\$0.04	23	23	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	New	2,986.37	13	\$89.39	22%	at stock turnover	\$0.00	8	8	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	12,226.58	5	\$5,400.00	6%	75%	\$0.09	23	23	AEG study for PN&L
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	Existing	50,547.71	23	\$77,262.02	8%	at stock turnover	\$0.21	24	23	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	Existing	29,660.12	23	\$12,423.29	17%	at stock turnover	\$0.04	44	45	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	25,192.19	10	\$815.00	15%	75%	\$0.00	63	70	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	3,644.58	15	\$2,595.00	15%	75%	\$0.07	9	10	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	Existing	1,061.51	15	\$3,890.00	15%	75%	\$0.34	2	3	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	Existing	21,759.04	12	\$22,500.00	15%	30%	\$0.13	66	80	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	3,849.69	10	\$7,500.00	15%	35%	\$0.09	16	18	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	32,708.32	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	6,530.72	15	\$15,875.00	20%	65%	\$0.06	61	67	BEST Simulation
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	Existing	44,584.75	23	\$63,584.04	7%	at stock turnover	\$0.05	9	9	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	835.65	18	\$105.00	15%	50%	\$0.00	6	7	BEST Simulation
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	Existing	25,219.74	10	\$31,970.00	18%	75%	\$0.16	128	157	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	6,860.06	50	\$125,000.00	15%	25%	\$0.61	13	17	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	511.52	45	\$63,135.00	15%	35%	\$0.12	2	2	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	2,309.87	20	\$410.00	15%	35%	\$0.10	9	11	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	6,293.20	45	\$34,640.00	15%	35%	\$0.15	25	29	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	4,126.11	20	\$17,500.00	15%	50%	\$0.09	30	33	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	-3,498.22	45	\$38,550.00	15%	35%	\$0.09	-14	-16	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	Existing	19,026.53	15	\$12,320.43	1%	at stock turnover	\$0.07	2	2	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	6,978.37	3	\$30,500.00	10%	75%	\$0.31	89	104	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	Existing	39,630.18	23	\$79,272.56	44%	at stock turnover	\$0.21	67	68	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$140,585.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	5,055.26	3	\$15,875.00	3%	14%	\$0.20	11	15	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	Existing	47,119.18	23	\$18,796.98	19%	at stock turnover	\$0.04	122	122	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	13,615.71	10	\$815.00	15%	75%	\$0.01	32	38	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	18,998.53	4	\$815.00	15%	75%	\$0.01	45	54	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	3,277.27	15	\$2,595.00	15%	75%	\$0.08	7	10	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	Existing	1,039.08	15	\$11,935.00	15%	75%	\$0.99	2	3	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	26,492.64	20	\$200,000.00	10%	30%	\$0.12	81	83	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	New	26,989.15	23	\$10,237.53	21%	at stock turnover	\$0.04	79	80	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	21,390.26	10	\$815.00	15%	75%	\$0.01	38	39	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	3,538.64	15	\$2,595.00	15%	75%	\$0.07	6	6	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$3,890.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	New	4,975.81	3	\$48,000.00	10%	75%	\$0.54	49	50	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	New	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	New	15,532.95	12	\$22,500.00	15%	30%	\$0.16	36	36	Environment Design Guide, November 2007 (PDF)
Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	2,876.64	10	\$7,500.00	15%	50%	\$0.10	15	16	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	26,124.03	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	New	4,884.57	15	\$15,875.00	20%	65%	\$0.07	34	35	BEST Simulation
Large Office	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Large Office bldg.	New	12,368.51	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	38,594.34	23	\$57,379.54	7%	at stock turnover	\$0.06	11	11	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	1,544.34	18	\$100.00	15%	35%	\$0.00	5	5	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	New	17,939.80	10	\$31,970.00	18%	75%	\$0.21	26	26	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	4,857.90	50	\$125,000.00	15%	25%	\$0.80	7	8	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	-425.17	45	\$63,135.00	15%	50%	\$0.25	-2	-2	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	4,497.29	45	\$34,640.00	15%	50%	\$0.16	24	25	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	3,048.66	20	\$17,500.00	15%	50%	\$0.10	16	17	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	-189.69	45	\$38,550.00	15%	50%	\$2.24	-1	-1	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	New	16,557.12	15	\$11,698.72	1%	at stock turnover	\$0.08	2	2	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	New	34,154.40	23	\$71,537.18	49%	at stock turnover	\$0.22	84	85	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	New	0.00	15	\$140,585.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	3,600.65	3	\$15,875.00	3%	14%	\$0.23	8	8	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	New	43,161.15	23	\$15,489.82	21%	at stock turnover	\$0.04	161	161	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	10,264.74	10	\$815.00	15%	75%	\$0.01	18	19	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	New	14,261.56	4	\$815.00	15%	75%	\$0.01	25	26	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	2,830.80	15	\$2,595.00	15%	75%	\$0.08	5	5	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$11,935.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	318.08	15	\$15,875.00	20%	65%	\$0.06	7	11	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	863.59	5	\$3,945.00	15%	25%	\$0.75	4	8	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	203.07	10	\$2,845.00	33%	60%	\$1.39	3	5	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	Existing	5,044.92	10	\$4,455.00	15%	30%	\$0.10	37	71	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	453.81	15	-\$20.03	100%	at stock turnover	-\$0.02	1	3	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	578.60	15	\$158.65	100%	at stock turnover	\$0.01	247	247	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	99.01	15	\$21.32	100%	at stock turnover	\$0.01	104	102	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	23.17	15	\$2.27	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	291.44	3	\$30,500.00	10%	75%	\$0.31	9	15	6th Plan
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	98.30	6	\$2.33	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	80.01	15	\$42.47	100%	at stock turnover	\$0.04	44	32	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	253.34	3	\$15,875.00	3%	14%	\$0.20	1	3	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	1,304.36	20	\$200,000.00	10%	30%	\$0.12	9	13	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	224.24	3	\$48,000.00	10%	75%	\$0.54	5	7	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	254.59	15	\$15,875.00	20%	65%	\$0.07	4	6	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	659.63	5	\$3,945.00	15%	25%	\$0.85	2	3	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	187.37	10	\$2,845.00	44%	60%	\$1.31	1	1	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	New	4,018.08	10	\$4,455.00	15%	30%	\$0.11	22	29	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	453.81	15	-\$20.03	100%	at stock turnover	-\$0.02	0	1	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	578.60	15	\$158.65	100%	at stock turnover	\$0.00	191	183	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	99.01	15	\$21.32	100%	at stock turnover	\$0.01	84	83	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	23.17	15	\$2.27	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	98.30	6	\$2.33	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	80.01	15	\$42.47	100%	at stock turnover	\$0.03	36	21	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	194.92	3	\$15,875.00	3%	14%	\$0.23	1	1	BEST Simulation
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	9,275.73	15	\$102.24	43%	at stock turnover	-\$0.01	24	24	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	945.35	10	\$192.68	76%	at stock turnover	\$0.03	15	13	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	1,602.66	18	\$460.87	43%	at stock turnover	\$0.03	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	1,702.07	10	\$374.64	66%	at stock turnover	\$0.03	16	14	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	9,275.73	15	\$122.69	52%	at stock turnover	-\$0.01	27	26	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	945.35	10	\$231.22	92%	at stock turnover	\$0.04	14	13	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	1,602.66	18	\$553.05	52%	at stock turnover	\$0.04	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	1,702.07	10	\$449.57	79%	at stock turnover	\$0.04	15	13	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	Existing	4,699.66	23	\$108,571.69	8%	at stock turnover	\$0.21	2	2	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	7,740.92	10	\$7,500.00	15%	35%	\$0.09	13	14	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	106,912.21	15	\$3,570.00	15%	25%	\$0.00	79	79	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	13,282.94	15	\$15,875.00	20%	65%	\$0.06	53	54	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	Existing	33,737.67	23	\$39,281.96	7%	at stock turnover	\$0.05	7	7	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	-947.03	18	\$105.00	15%	50%	\$0.00	-3	-3	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	41,364.31	45	\$63,135.00	15%	35%	\$0.12	71	74	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	-1,642.92	20	\$410.00	15%	35%	\$0.10	-3	-3	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	12,685.91	45	\$34,640.00	15%	35%	\$0.15	22	23	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	10,124.03	20	\$17,500.00	15%	50%	\$0.09	31	32	BEST Simulation
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	40,297.13	45	\$38,550.00	15%	35%	\$0.09	71	72	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	15,098.48	3	\$30,500.00	10%	75%	\$0.31	83	88	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	Existing	0.00	14	\$213,650.00	3%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	10,937.98	3	\$15,875.00	3%	14%	\$0.20	10	11	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	70,497.97	20	\$200,000.00	10%	30%	\$0.12	72	72	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	New	14,910.18	23	\$101,024.13	8%	at stock turnover	\$0.19	9	8	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	New	14,115.68	3	\$48,000.00	10%	75%	\$0.54	46	47	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	7,667.02	10	\$7,500.00	15%	50%	\$0.10	14	14	AEG research & analysis
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	106,789.80	15	\$3,570.00	15%	25%	\$0.00	44	44	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	New	12,958.17	15	\$15,875.00	20%	65%	\$0.07	30	30	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	29,811.64	23	\$40,226.58	7%	at stock turnover	\$0.06	8	8	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	730.33	18	\$100.00	15%	35%	\$0.00	1	1	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	20,003.96	45	\$63,135.00	15%	50%	\$0.25	36	36	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	12,154.84	45	\$34,640.00	15%	50%	\$0.16	22	22	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	9,902.63	20	\$17,500.00	15%	50%	\$0.10	18	18	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	1,618.13	45	\$38,550.00	15%	50%	\$2.24	3	3	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	New	0.00	14	\$213,650.00	6%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	10,412.88	3	\$15,875.00	3%	14%	\$0.23	8	8	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	2,510.91	15	\$15,875.00	20%	65%	\$0.06	54	87	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	389.66	15	-\$17.20	100%	at stock turnover	-\$0.02	2	6	EIA 2011
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	496.81	15	\$136.22	100%	at stock turnover	\$0.01	503	503	EIA 2011
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	14,366.09	5	\$52,150.00	5%	15%	\$0.58	22	47	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	Existing	22,942.83	5	\$3,265.00	15%	50%	\$0.03	134	248	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	13,903.16	12	\$20,000.00	3%	25%	\$0.13	139	295	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	Existing	2,086.83	16	\$2,060.00	1%	3%	\$0.07	2	5	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	14,936.21	10	\$8,520.00	7%	45%	\$0.06	187	379	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	Existing	0.00	25	\$20,500.00	15%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	Existing	1,806.27	5	\$5,500.00	10%	25%	\$0.38	3	10	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	140.80	15	\$30.32	100%	at stock turnover	\$0.01	1,963	1,915	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	32.95	15	\$3.23	100%	at stock turnover	\$0.01	0	1	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	2,220.56	3	\$30,500.00	10%	75%	\$0.30	65	112	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	148.13	6	\$3.52	100%	at stock turnover	\$0.00	0	2	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	120.56	15	\$63.99	100%	at stock turnover	\$0.04	400	292	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,930.20	3	\$15,875.00	3%	14%	\$0.20	10	25	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	10,466.80	20	\$200,000.00	10%	30%	\$0.12	68	99	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	1,732.58	3	\$48,000.00	10%	75%	\$0.54	36	53	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	1,975.47	15	\$15,875.00	20%	65%	\$0.07	29	42	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	389.66	15	-\$17.20	100%	at stock turnover	-\$0.02	1	1	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	496.81	15	\$136.22	100%	at stock turnover	\$0.00	389	372	EIA 2011
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	12,125.77	5	\$52,150.00	5%	15%	\$0.62	12	17	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	New	19,626.58	5	\$3,265.00	15%	50%	\$0.03	68	98	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	10,840.15	12	\$20,000.00	4%	25%	\$0.15	72	105	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	New	1,683.07	16	\$2,060.00	1%	3%	\$0.09	1	2	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	11,693.15	10	\$8,520.00	22%	45%	\$0.07	40	59	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	New	0.00	25	\$20,500.00	18%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Large Office bldg.	New	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	New	1,204.66	5	\$5,500.00	10%	25%	\$0.54	2	2	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	140.80	15	\$30.32	100%	at stock turnover	\$0.01	1,580	1,557	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	32.95	15	\$3.23	100%	at stock turnover	\$0.01	0	1	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	148.13	6	\$3.52	100%	at stock turnover	\$0.00	0	1	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	120.56	15	\$63.99	100%	at stock turnover	\$0.03	323	186	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,507.41	3	\$15,875.00	3%	14%	\$0.23	7	10	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	105.24	7	\$1,395.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	Existing	1.54	7	\$30.00	1%	3%	\$3.74	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	Existing	74.97	10	\$195.00	1%	3%	\$0.39	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	Existing	1,857.27	15	\$12,385.00	15%	75%	\$0.80	26	26	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,442.41	3	\$15,875.00	3%	14%	\$0.20	9	8	BEST Simulation
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	113.19	7	\$1,395.00	1%	2%	\$0.18	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	New	1,857.27	15	\$12,385.00	15%	75%	\$0.80	16	16	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Large Office bldg.	New	143.91	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,406.86	3	\$15,875.00	3%	14%	\$0.23	7	7	BEST Simulation
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$500,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	37,644.88	6	\$282.46	100%	at stock turnover	\$0.00	332	350	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	Existing	1,186.06	4	\$1,325.00	10%	50%	\$0.31	73	83	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	7,411.43	6	\$183.70	100%	at stock turnover	\$0.01	65	69	ENERGY STAR Calculator
Large Office	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,547.85	6	\$442.72	100%	at stock turnover	\$0.01	23	24	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	3,501.32	5	\$2,000.00	10%	25%	\$0.13	81	92	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	638.07	6	\$1.92	40%	at stock turnover	\$0.00	4	4	Assumed same as Desktop
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,813.39	6	\$87.11	100%	at stock turnover	\$0.00	14	14	ENERGY STAR Calculator
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	New	0.00	20	\$150,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	37,644.88	6	\$282.46	100%	at stock turnover	\$0.00	249	245	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	New	1,225.90	4	\$1,325.00	10%	50%	\$0.30	43	46	Developed from RTF
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	7,411.43	6	\$183.70	100%	at stock turnover	\$0.01	49	48	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	3,635.47	5	\$2,000.00	10%	25%	\$0.13	47	51	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	638.07	6	\$2.11	44%	at stock turnover	\$0.00	3	3	Assumed same as Desktop
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	6,813.39	6	\$87.11	100%	at stock turnover	\$0.00	9	9	ENERGY STAR Calculator
Large Office	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	4,578.56	6	\$34.35	100%	at stock turnover	\$0.00	69	68	Assumed same as Desktop
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	Existing	490.93	9	\$24.79	45%	at stock turnover	\$0.01	1	1	EIA 2011
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	Existing	1,190.00	9	\$105.00	0%	10%	\$0.01	0	0	PacificCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$28,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$5,375.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$12,680.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	Existing	2,264.85	10	\$294.74	45%	at stock turnover	\$0.03	20	17	EIA 2011
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	New	0.00	5	\$1,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	New	490.93	9	\$29.75	54%	at stock turnover	\$0.01	1	1	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	New	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	New	1,190.00	9	\$105.00	0%	10%	\$0.01	0	0	PacifiCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	New	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	New	0.00	15	\$28,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	New	0.00	15	\$5,375.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	New	0.00	4	\$12,680.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	New	2,264.85	10	\$353.69	54%	at stock turnover	\$0.04	20	18	EIA 2011
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	6,648.36	15	\$15,875.00	20%	65%	\$0.06	64	77	BEST Simulation
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	3,563.11	18	\$105.00	15%	50%	\$0.00	29	34	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	7,669.56	50	\$125,000.00	15%	25%	\$0.61	16	22	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	1,070.29	45	\$63,135.00	15%	35%	\$0.12	4	6	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	-360.12	20	\$410.00	15%	35%	\$0.10	-2	-2	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	4,212.20	20	\$17,500.00	15%	50%	\$0.09	31	38	BEST Simulation
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	1,463.83	45	\$38,550.00	15%	35%	\$0.09	6	8	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	7,826.04	3	\$30,500.00	10%	75%	\$0.31	107	131	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	5,669.33	3	\$15,875.00	3%	14%	\$0.20	13	20	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	Existing	2,040.44	15	\$11,000.00	15%	75%	\$0.57	25	32	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	Existing	19,652.98	18	\$8,500.00	15%	35%	\$0.04	85	101	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	Existing	52,874.89	20	\$72,418.99	100%	at stock turnover	\$0.14	43	44	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	Existing	57,442.93	15	\$8,160.00	13%	50%	\$0.02	487	544	BEST Simulation
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	28,338.56	20	\$200,000.00	10%	30%	\$0.12	81	82	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	New	5,803.36	3	\$48,000.00	10%	75%	\$0.54	54	54	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	0.00	10	\$7,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	New	5,166.84	15	\$15,875.00	20%	65%	\$0.07	33	34	BEST Simulation
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	3,538.05	18	\$100.00	15%	35%	\$0.00	10	10	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	5,664.94	50	\$125,000.00	15%	25%	\$0.80	8	8	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	325.27	45	\$63,135.00	15%	50%	\$0.25	2	2	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	3,261.10	20	\$17,500.00	15%	50%	\$0.10	16	16	BEST Simulation
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	-74.18	45	\$38,550.00	15%	50%	\$2.24	0	0	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	4,231.87	3	\$15,875.00	3%	14%	\$0.23	9	9	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	New	1,546.92	15	\$6,500.00	15%	75%	\$0.43	13	13	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	New	15,362.87	18	\$8,500.00	15%	35%	\$0.06	44	44	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	New	45,964.10	20	\$71,802.34	100%	at stock turnover	\$0.16	23	23	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	New	45,522.39	15	\$8,160.00	19%	50%	\$0.02	201	201	BEST Simulation
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,406.70	5	\$9,000.00	3%	75%	\$0.43	41	44	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	1,182.53	7	\$1,395.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	Existing	27,091.11	20	\$1,115.00	1%	7%	\$0.00	21	21	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,708.67	5	\$2,000.00	1%	10%	\$0.09	6	6	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	Existing	12,182.43	5	\$660.00	25%	65%	\$0.01	24	25	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	Existing	1,572.63	15	\$575.00	15%	25%	\$0.04	2	2	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	Existing	228.09	15	\$15.00	15%	75%	\$0.01	2	2	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	2,833.84	15	\$3,125.00	16%	75%	\$0.11	22	23	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	Existing	10,403.60	20	\$12,500.00	1%	30%	\$0.11	39	41	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	Existing	1,033.59	13	\$65.65	68%	at stock turnover	\$0.01	9	9	BEST Simulation
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,221.88	5	\$9,000.00	3%	75%	\$0.43	39	43	AEG study for PN&L
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	13,331.66	20	\$200,000.00	10%	30%	\$0.12	20	20	AEG research & analysis
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	3,980.56	5	\$9,000.00	6%	75%	\$0.43	20	20	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	1,115.14	7	\$1,395.00	1%	2%	\$0.18	0	0	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	New	27,013.69	20	\$1,115.00	1%	7%	\$0.00	13	13	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	New	4,757.27	5	\$2,000.00	0%	75%	\$0.09	27	27	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	New	12,141.41	5	\$660.00	25%	65%	\$0.01	14	14	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	New	1,588.69	15	\$575.00	15%	25%	\$0.04	1	1	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	New	228.34	15	\$15.00	15%	75%	\$0.01	1	1	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	New	2,766.27	15	\$3,125.00	1%	75%	\$0.12	15	15	BEST Simulation
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	New	10,129.66	20	\$12,500.00	1%	30%	\$0.11	22	22	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	New	1,033.59	13	\$65.65	68%	at stock turnover	\$0.01	8	8	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	4,138.08	5	\$9,000.00	6%	75%	\$0.43	21	21	AEG study for PN&L
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Large Retail bldg.	Existing	59,973.44	23	\$36,918.55	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	Existing	64,270.77	23	\$20,790.03	12%	at stock turnover	\$0.03	21	21	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	50,784.17	10	\$810.00	15%	75%	\$0.00	16	18	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	7,388.99	15	\$2,160.00	15%	75%	\$0.03	2	3	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	Existing	1,949.06	15	\$4,350.00	15%	75%	\$0.21	1	1	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	Existing	46,950.23	12	\$45,000.00	15%	30%	\$0.11	27	33	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	8,952.90	10	\$15,000.00	15%	35%	\$0.07	7	8	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	75,172.82	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	15,063.03	15	\$31,750.00	20%	65%	\$0.05	27	29	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	Existing	28,565.63	15	\$58,092.38	3%	at stock turnover	\$0.25	3	2	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	Existing	102,968.16	23	\$100,425.16	2%	at stock turnover	\$0.06	3	3	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	1,930.62	18	\$120.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	Existing	60,809.30	10	\$35,720.00	18%	75%	\$0.08	59	69	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	15,943.99	50	\$250,000.00	15%	25%	\$0.79	6	8	6th Plan
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	-3,580.76	45	\$126,270.00	15%	35%	\$0.08	-3	-3	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	6,987.87	20	\$820.00	15%	35%	\$0.12	5	6	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	13,585.51	45	\$69,280.00	15%	35%	\$0.12	10	12	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	8,879.81	20	\$35,000.00	15%	50%	\$0.09	12	13	BEST Simulation
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	-8,096.41	45	\$77,100.00	15%	35%	\$0.07	-6	-7	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	PTAC - EER 12.2	per 100,000 sqft Large Retail bldg.	Existing	43,942.61	15	\$28,454.58	1%	at stock turnover	\$0.07	2	2	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	16,211.27	3	\$61,000.00	10%	75%	\$0.28	40	46	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$157,080.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	11,715.48	3	\$31,750.00	0%	3%	\$0.17	1	2	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	29,344.81	10	\$810.00	15%	75%	\$0.00	2	3	DEER
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	39,305.17	4	\$810.00	15%	75%	\$0.01	3	4	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	6,693.93	15	\$2,160.00	15%	75%	\$0.03	0	1	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	Existing	1,826.22	15	\$9,940.00	15%	75%	\$0.47	0	0	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	62,393.86	20	\$400,000.00	10%	30%	\$0.11	37	37	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Large Retail bldg.	New	58,059.01	23	\$31,782.66	3%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	New	57,036.48	23	\$18,469.19	16%	at stock turnover	\$0.03	27	27	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	41,140.92	10	\$810.00	15%	75%	\$0.00	10	10	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	6,148.65	15	\$2,160.00	15%	75%	\$0.03	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$4,350.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	New	12,561.60	3	\$96,000.00	10%	75%	\$0.48	24	24	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	New	36,191.78	12	\$45,000.00	15%	30%	\$0.14	16	16	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	7,223.70	10	\$15,000.00	15%	50%	\$0.08	8	8	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	60,344.16	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	New	12,208.59	15	\$31,750.00	20%	65%	\$0.06	16	17	BEST Simulation
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	New	28,565.63	15	\$81,329.34	3%	at stock turnover	\$0.35	3	3	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	New	99,659.33	23	\$86,454.60	2%	at stock turnover	\$0.05	4	4	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	3,539.88	18	\$110.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	New	48,930.00	10	\$35,720.00	18%	75%	\$0.10	13	14	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	12,262.77	50	\$250,000.00	15%	25%	\$1.05	4	4	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-3,772.76	45	\$126,270.00	15%	50%	\$0.09	-4	-4	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	10,759.70	45	\$69,280.00	15%	50%	\$0.13	11	11	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	7,179.99	20	\$35,000.00	15%	50%	\$0.10	7	8	BEST Simulation
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	-478.83	45	\$77,100.00	15%	50%	\$1.72	0	0	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$157,080.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	9,074.72	3	\$31,750.00	0%	3%	\$0.20	1	1	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Large Retail bldg.	New	91,120.07	23	\$27,944.69	4%	at stock turnover	\$0.03	11	11	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	21,716.02	10	\$810.00	15%	75%	\$0.00	1	1	DEER
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	29,318.72	4	\$810.00	15%	75%	\$0.01	2	2	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	4,628.90	15	\$2,160.00	15%	75%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$9,940.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	1,433.18	15	\$31,750.00	20%	65%	\$0.05	6	10	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	3,842.57	5	\$45,480.00	15%	25%	\$1.93	4	8	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	2,701.89	10	\$26,030.00	33%	60%	\$0.98	7	15	AEG research & analysis
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	Existing	22,711.16	10	\$40,740.00	15%	30%	\$0.20	33	66	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	275.21	15	-\$10.63	100%	at stock turnover	-\$0.02	1	1	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	350.89	15	\$84.19	100%	at stock turnover	\$0.00	151	140	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	53.28	15	\$10.04	100%	at stock turnover	\$0.01	87	85	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	12.47	15	\$1.07	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	1,318.35	3	\$61,000.00	10%	75%	\$0.27	8	13	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	60.65	6	\$1.26	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	49.36	15	\$22.92	100%	at stock turnover	\$0.03	44	32	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	1,230.50	3	\$31,750.00	0%	3%	\$0.17	0	1	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	6,329.15	20	\$400,000.00	10%	30%	\$0.10	7	10	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	1,012.30	3	\$96,000.00	10%	75%	\$0.48	4	5	6th Plan
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	1,145.75	15	\$31,750.00	20%	65%	\$0.06	3	4	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	2,946.08	5	\$45,480.00	15%	25%	\$2.24	2	2	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	2,205.41	10	\$26,030.00	44%	60%	\$1.06	2	3	AEG research & analysis
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	New	17,455.32	10	\$40,740.00	15%	30%	\$0.23	14	20	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	275.21	15	-\$10.63	100%	at stock turnover	-\$0.02	0	1	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	350.89	15	\$84.19	100%	at stock turnover	\$0.00	108	101	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	53.28	15	\$10.04	100%	at stock turnover	\$0.01	62	61	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	12.47	15	\$1.07	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	60.65	6	\$1.26	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	49.36	15	\$22.92	100%	at stock turnover	\$0.03	31	18	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	945.74	3	\$31,750.00	0%	3%	\$0.20	0	0	BEST Simulation
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	46,468.29	15	\$470.67	40%	at stock turnover	-\$0.01	23	22	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	4,735.89	10	\$571.07	45%	at stock turnover	\$0.02	9	8	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	8,028.78	18	\$2,121.61	40%	at stock turnover	\$0.03	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	8,526.82	10	\$1,390.57	49%	at stock turnover	\$0.02	12	11	Developed from RTF "ComCookingConvectionOven" v2.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	46,468.29	15	\$706.01	59%	at stock turnover	-\$0.01	28	27	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	4,735.89	10	\$856.61	68%	at stock turnover	\$0.03	9	8	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	8,028.78	18	\$3,182.42	59%	at stock turnover	\$0.04	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	8,526.82	10	\$2,085.86	73%	at stock turnover	\$0.04	12	11	Developed from RTF "ComCookingConvectionOven" v2.0
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Large Retail bldg.	Existing	8,007.44	23	\$120,156.70	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	19,737.36	10	\$15,000.00	15%	35%	\$0.07	8	8	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	267,385.23	15	\$3,570.00	15%	25%	\$0.00	45	45	Developed from RTF
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	33,655.59	15	\$31,750.00	20%	65%	\$0.05	30	30	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	-1,446.27	18	\$120.00	15%	25%	\$0.00	0	0	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	131,234.55	45	\$126,270.00	15%	35%	\$0.08	51	53	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	-6,312.61	20	\$820.00	15%	35%	\$0.12	-2	-3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	32,038.29	45	\$69,280.00	15%	35%	\$0.12	12	13	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	25,140.10	20	\$35,000.00	15%	50%	\$0.09	17	18	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	102,131.11	45	\$77,100.00	15%	35%	\$0.07	40	41	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	38,237.95	3	\$61,000.00	10%	75%	\$0.28	47	50	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	Existing	0.00	14	\$182,010.00	3%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	27,623.92	3	\$31,750.00	0%	3%	\$0.17	2	2	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	168,431.79	20	\$400,000.00	10%	30%	\$0.11	34	35	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Large Retail bldg.	New	11,136.01	23	\$120,106.85	3%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	New	34,440.92	3	\$96,000.00	10%	75%	\$0.48	23	23	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	19,143.12	10	\$15,000.00	15%	50%	\$0.08	7	7	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	267,385.23	15	\$3,570.00	15%	25%	\$0.00	22	22	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	New	32,354.22	15	\$31,750.00	20%	65%	\$0.06	15	15	BEST Simulation
Large Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	New	24,970.19	23	\$65,452.13	2%	at stock turnover	\$0.05	1	1	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	6,975.52	18	\$110.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	126,794.90	45	\$126,270.00	15%	50%	\$0.09	46	46	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	29,042.35	45	\$69,280.00	15%	50%	\$0.13	10	10	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	23,658.63	20	\$35,000.00	15%	50%	\$0.10	8	8	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	3,948.20	45	\$77,100.00	15%	50%	\$1.72	1	1	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	New	0.00	14	\$182,010.00	6%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	24,880.83	3	\$31,750.00	0%	3%	\$0.20	1	1	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	9,614.07	15	\$31,750.00	20%	65%	\$0.05	41	68	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	738.06	15	-\$28.50	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	941.01	15	\$225.77	100%	at stock turnover	\$0.00	508	472	EIA 2011
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	49,175.00	5	\$189,170.00	5%	15%	\$0.61	15	33	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	Existing	78,264.48	5	\$11,570.00	15%	50%	\$0.03	92	173	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	57,201.05	12	\$40,000.00	3%	25%	\$0.06	115	248	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	Existing	8,254.22	16	\$7,290.00	1%	3%	\$0.06	2	4	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	61,925.18	10	\$30,170.00	7%	45%	\$0.05	159	319	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	Existing	0.00	25	\$41,000.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$33,000.00	7%	15%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	Existing	7,738.53	5	\$11,000.00	10%	25%	\$0.18	3	9	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	197.11	15	\$37.14	100%	at stock turnover	\$0.01	1,339	1,306	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	46.12	15	\$3.95	100%	at stock turnover	\$0.01	0	1	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	9,146.31	3	\$61,000.00	10%	75%	\$0.27	54	94	6th Plan
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	211.96	6	\$4.40	100%	at stock turnover	\$0.00	0	1	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	172.52	15	\$80.12	100%	at stock turnover	\$0.03	350	254	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	7,928.76	3	\$31,750.00	0%	3%	\$0.17	2	6	BEST Simulation
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	43,301.99	20	\$400,000.00	10%	30%	\$0.10	46	67	AEG research & analysis
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	7,459.00	3	\$96,000.00	10%	75%	\$0.48	26	37	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	8,142.31	15	\$31,750.00	20%	65%	\$0.06	20	28	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	738.06	15	-\$28.50	100%	at stock turnover	-\$0.02	1	2	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	941.01	15	\$225.77	100%	at stock turnover	\$0.00	363	340	EIA 2011
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	40,904.20	5	\$189,170.00	5%	15%	\$0.67	7	10	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	New	66,029.51	5	\$11,570.00	15%	50%	\$0.03	41	60	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	48,195.01	12	\$40,000.00	4%	25%	\$0.07	53	76	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	New	6,962.99	16	\$7,290.00	1%	3%	\$0.07	1	1	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	50,923.72	10	\$30,170.00	22%	45%	\$0.06	29	42	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	New	0.00	25	\$41,000.00	18%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$33,000.00	7%	15%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	New	5,186.07	5	\$11,000.00	10%	25%	\$0.25	1	2	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	197.11	15	\$37.14	100%	at stock turnover	\$0.01	955	940	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	46.12	15	\$3.95	100%	at stock turnover	\$0.01	0	1	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	211.96	6	\$4.40	100%	at stock turnover	\$0.00	0	1	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	172.52	15	\$80.12	100%	at stock turnover	\$0.03	248	143	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	6,472.56	3	\$31,750.00	0%	3%	\$0.20	1	2	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	364.76	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	Existing	5.34	7	\$30.00	1%	3%	\$1.08	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	Existing	261.12	10	\$190.00	1%	3%	\$0.11	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	Existing	5,182.49	15	\$8,370.00	15%	75%	\$0.19	7	7	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	1,604.08	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Large Retail bldg.	Existing	287.82	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,565.27	3	\$31,750.00	0%	3%	\$0.17	1	1	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	434.05	7	\$1,400.00	1%	2%	\$0.17	0	0	Developed from RTF
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Large Retail bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	New	5,187.94	15	\$8,370.00	15%	75%	\$0.19	4	4	AEG research & analysis
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	New	1,604.08	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	4,386.86	3	\$31,750.00	0%	3%	\$0.20	1	1	BEST Simulation
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	13,315.58	6	\$99.91	100%	at stock turnover	\$0.00	24	25	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	Existing	1,099.39	4	\$2,650.00	10%	50%	\$0.66	15	17	Developed from RTF
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,621.54	6	\$64.98	100%	at stock turnover	\$0.01	5	5	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,316.08	6	\$156.60	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	3,290.43	5	\$4,000.00	10%	25%	\$0.29	17	19	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	406.25	6	\$3.05	100%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	3,615.00	6	\$46.22	100%	at stock turnover	\$0.00	1	2	ENERGY STAR Calculator
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,429.26	6	\$14.95	82%	at stock turnover	\$0.00	10	10	Assumed same as Desktop
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	13,315.58	6	\$99.91	100%	at stock turnover	\$0.00	16	16	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	New	1,235.96	4	\$2,650.00	10%	50%	\$0.57	8	9	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,621.54	6	\$64.98	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,316.08	6	\$156.60	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	3,759.49	5	\$4,000.00	10%	25%	\$0.25	10	10	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	406.25	6	\$3.05	100%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	3,615.00	6	\$46.22	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,429.26	6	\$17.94	98%	at stock turnover	\$0.00	7	6	Assumed same as Desktop
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	Existing	6,317.27	9	\$372.29	52%	at stock turnover	\$0.01	4	4	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	Existing	2,672.84	8	\$2,540.00	0%	25%	\$0.16	3	3	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	Existing	1,190.00	9	\$100.00	0%	25%	\$0.01	0	0	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	Existing	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	Existing	1,859.17	15	\$30,580.00	0%	25%	\$1.84	7	7	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	Existing	3,839.97	15	\$5,380.00	0%	25%	\$0.16	14	15	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	Existing	3,822.53	4	\$10.00	0%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	Existing	14,571.93	10	\$2,213.13	52%	at stock turnover	\$0.03	30	26	EIA 2011
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	New	6,317.27	9	\$558.43	79%	at stock turnover	\$0.01	4	4	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	New	3,241.77	8	\$2,540.00	0%	25%	\$0.14	2	2	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	New	1,190.00	9	\$100.00	0%	25%	\$0.01	0	0	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	New	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	New	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	New	1,799.06	15	\$30,580.00	0%	25%	\$1.90	4	4	Developed from RTF
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	New	3,696.99	15	\$5,380.00	0%	25%	\$0.17	9	9	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	New	3,820.44	4	\$10.00	0%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	New	14,571.93	10	\$3,319.69	79%	at stock turnover	\$0.05	30	28	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	5,608.62	15	\$31,750.00	20%	65%	\$0.05	10	13	BEST Simulation
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	3,035.70	18	\$120.00	15%	25%	\$0.00	1	2	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	6,444.58	50	\$250,000.00	15%	25%	\$0.79	2	4	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	-12.96	45	\$126,270.00	15%	35%	\$0.08	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	7.98	20	\$820.00	15%	35%	\$0.11	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	3,553.48	20	\$35,000.00	15%	50%	\$0.09	5	7	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	1,234.88	45	\$77,100.00	15%	35%	\$0.07	1	1	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	6,547.43	3	\$61,000.00	10%	75%	\$0.28	17	22	6th Plan
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,729.94	3	\$31,750.00	0%	3%	\$0.17	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	Existing	1,701.52	15	\$22,000.00	15%	75%	\$1.33	4	5	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	Existing	16,139.18	18	\$17,000.00	15%	35%	\$0.10	13	17	DEER
Large Retail	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Large Retail bldg.	Existing	72,975.84	20	\$65,284.00	100%	at stock turnover	\$0.09	59	60	BEST Simulation
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	Existing	47,784.45	15	\$6,950.00	13%	50%	\$0.02	76	92	BEST Simulation
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	19,366.46	20	\$400,000.00	10%	30%	\$0.11	10	10	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	New	3,932.13	3	\$96,000.00	10%	75%	\$0.48	6	7	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	New	3,516.47	15	\$31,750.00	20%	65%	\$0.06	4	4	BEST Simulation
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	1,708.18	18	\$110.00	15%	25%	\$0.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	3,838.58	50	\$250,000.00	15%	25%	\$1.05	1	1	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-1,324.33	45	\$126,270.00	15%	50%	\$0.09	-1	-1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	2,228.59	20	\$35,000.00	15%	50%	\$0.10	2	2	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	-49.97	45	\$77,100.00	15%	50%	\$1.72	0	0	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	2,840.64	3	\$31,750.00	0%	3%	\$0.20	0	0	BEST Simulation
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	New	1,013.51	15	\$13,000.00	15%	75%	\$1.20	2	2	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	New	9,752.08	18	\$17,000.00	15%	35%	\$0.16	5	5	DEER
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	New	30,418.88	15	\$6,950.00	19%	50%	\$0.03	24	24	BEST Simulation
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	9,284.79	5	\$18,000.00	3%	75%	\$0.39	17	19	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	971.76	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	Existing	58,652.49	20	\$1,120.00	0%	2%	\$0.00	2	2	Developed from RTF (Residential)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	10,128.77	5	\$4,000.00	1%	10%	\$0.09	2	3	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	Existing	26,741.99	5	\$1,320.00	25%	65%	\$0.01	10	11	DEER
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$720.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	Existing	374.09	15	\$30.00	15%	75%	\$0.01	1	1	DEER
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	6,514.12	15	\$4,420.00	16%	75%	\$0.08	10	10	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	Existing	22,383.89	20	\$25,000.00	1%	30%	\$0.10	17	18	BEST Simulation
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	Existing	2,236.17	13	\$106.25	63%	at stock turnover	\$0.01	4	4	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	9,692.38	5	\$18,000.00	3%	75%	\$0.39	18	19	AEG study for PN&L
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	30,379.26	20	\$400,000.00	10%	30%	\$0.11	8	8	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	9,094.79	5	\$18,000.00	6%	75%	\$0.39	8	8	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	915.92	7	\$1,400.00	1%	2%	\$0.17	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	New	58,485.09	20	\$1,120.00	0%	2%	\$0.00	2	2	Developed from RTF (Residential)
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	New	10,187.24	5	\$4,000.00	0%	75%	\$0.09	10	10	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	New	26,638.07	5	\$1,320.00	25%	65%	\$0.01	5	5	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$720.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	New	374.33	15	\$30.00	15%	75%	\$0.01	0	0	DEER
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	6,576.19	15	\$4,420.00	1%	75%	\$0.08	6	6	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	New	20,952.12	20	\$25,000.00	1%	30%	\$0.10	8	8	BEST Simulation
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	New	2,236.17	13	\$106.25	63%	at stock turnover	\$0.01	3	3	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	8,748.25	5	\$18,000.00	6%	75%	\$0.39	8	8	AEG study for PN&L
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	52,514.14	23	\$73,835.95	20%	at stock turnover	\$0.02	14	14	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	Existing	11,070.52	23	\$5,542.03	5%	at stock turnover	\$0.05	1	1	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	6,748.69	10	\$814.00	15%	75%	\$0.02	1	1	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	2,865.68	15	\$1,622.50	15%	75%	\$0.05	0	0	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	Existing	111.42	15	\$742.50	15%	75%	\$0.60	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	Destratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	Existing	18,419.60	12	\$24,750.00	15%	30%	\$0.15	10	12	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	3,266.74	10	\$8,250.00	15%	35%	\$0.11	2	3	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	32,379.47	15	\$3,569.50	15%	75%	\$0.00	13	15	Developed from RTF
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	Existing	12,786.22	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	71,464.72	23	\$93,876.13	3%	at stock turnover	\$0.01	1	1	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	Existing	18,525.77	10	\$6,088.50	18%	75%	\$0.04	10	11	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	6,288.74	50	\$137,500.00	15%	25%	\$0.95	2	3	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	-4,763.17	45	\$69,448.50	15%	35%	\$0.30	-3	-4	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	5,330.29	45	\$38,104.00	15%	35%	\$0.18	4	4	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	3,483.67	20	\$19,250.00	15%	50%	\$0.13	4	5	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	-2,953.64	45	\$42,405.00	15%	35%	\$0.11	-2	-2	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	14,068.05	15	\$258.50	15%	75%	\$0.00	32	36	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	Existing	19,669.09	15	\$12,736.52	31%	at stock turnover	\$0.07	25	24	BEST Simulation
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	6,393.46	3	\$33,550.00	10%	75%	\$0.41	15	17	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	Existing	6,129.29	23	\$12,133.06	9%	at stock turnover	\$0.21	1	1	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$26,763.00	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	Existing	20,528.72	23	\$8,385.33	20%	at stock turnover	\$0.04	11	11	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	5,660.48	10	\$814.00	15%	75%	\$0.02	3	3	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	7,584.13	4	\$814.00	15%	75%	\$0.03	4	5	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	4,693.76	15	\$1,622.50	15%	75%	\$0.03	2	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	Existing	128.16	15	\$7,452.50	15%	75%	\$4.78	0	0	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	25,509.59	20	\$220,000.00	10%	25%	\$0.11	12	13	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	55,398.05	23	\$63,174.60	23%	at stock turnover	\$0.02	25	24	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	New	10,067.66	23	\$5,312.93	6%	at stock turnover	\$0.05	1	1	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	5,481.53	10	\$814.00	15%	75%	\$0.02	1	1	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	2,500.48	15	\$1,622.50	15%	75%	\$0.06	0	0	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$742.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	New	5,154.50	3	\$52,800.00	10%	75%	\$0.73	11	11	6th Plan
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	1,170.20	15	\$16,901.50	45%	85%	\$75,253.74	1	1	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	New	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	Destratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	New	14,893.43	12	\$24,750.00	15%	30%	\$0.17	7	7	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	2,663.26	10	\$8,250.00	15%	50%	\$0.12	3	3	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	25,907.12	15	\$3,569.50	15%	75%	\$0.00	9	9	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	New	12,786.22	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	75,525.37	23	\$80,321.14	3%	at stock turnover	\$0.01	6	6	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	New	16,566.34	10	\$6,088.50	18%	75%	\$0.05	3	3	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	11,554.94	15	\$258.50	15%	75%	\$0.04	22	23	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	5,032.56	50	\$137,500.00	15%	25%	\$1.13	2	2	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	-2,698.37	45	\$69,448.50	15%	50%	\$0.71	-3	-3	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	4,312.57	45	\$38,104.00	15%	50%	\$0.20	5	5	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	2,822.68	20	\$19,250.00	15%	50%	\$0.14	3	3	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	-196.51	45	\$42,405.00	15%	50%	\$3.22	0	0	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	12,652.56	15	\$258.50	15%	75%	\$0.00	25	26	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	New	17,116.28	15	\$12,093.80	37%	at stock turnover	\$0.08	26	24	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	New	5,102.49	23	\$11,114.15	11%	at stock turnover	\$0.23	1	1	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	New	0.00	15	\$26,763.00	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	New	18,845.84	23	\$8,038.69	24%	at stock turnover	\$0.04	18	18	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	4,289.96	10	\$814.00	15%	75%	\$0.02	2	2	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	New	5,792.51	4	\$814.00	15%	75%	\$0.03	2	3	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	3,905.07	15	\$1,622.50	15%	75%	\$0.03	2	2	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$7,452.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	1,804.39	5	\$1,083.50	15%	25%	\$0.10	2	3	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	718.07	10	\$3,586.00	33%	60%	\$0.51	2	3	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	Existing	10,369.17	10	\$5,615.50	15%	30%	\$0.06	14	27	AEG research & analysis
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	761.44	15	-\$39.20	100%	at stock turnover	-\$0.02	0	1	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	970.82	15	\$310.56	100%	at stock turnover	\$0.00	88	83	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	197.26	15	\$36.30	100%	at stock turnover	\$0.01	7	6	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	47.39	15	\$5.42	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	596.14	3	\$33,550.00	10%	75%	\$0.41	3	5	6th Plan
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	195.28	6	\$5.41	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	158.94	15	\$98.42	100%	at stock turnover	\$0.04	23	17	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	2,771.81	20	\$220,000.00	10%	25%	\$0.11	3	4	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	474.58	3	\$52,800.00	10%	75%	\$0.73	2	3	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	1,447.57	5	\$1,083.50	15%	25%	\$0.11	1	1	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	751.31	10	\$3,586.00	44%	60%	\$0.44	1	1	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	New	8,536.20	10	\$5,615.50	15%	30%	\$0.07	8	11	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	761.44	15	-\$39.20	100%	at stock turnover	-\$0.02	0	1	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	970.82	15	\$310.56	100%	at stock turnover	\$0.00	83	79	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	197.26	15	\$36.30	100%	at stock turnover	\$0.01	6	6	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	47.39	15	\$5.42	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	195.28	6	\$5.41	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	158.94	15	\$98.42	100%	at stock turnover	\$0.04	22	12	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	45,098.59	15	\$346.61	30%	at stock turnover	\$0.00	15	15	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	4,596.29	10	\$257.50	21%	at stock turnover	\$0.01	4	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	7,792.12	18	\$1,562.39	30%	at stock turnover	\$0.02	2	2	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	8,275.48	10	\$380.86	14%	at stock turnover	\$0.01	3	3	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	45,098.59	15	\$450.59	39%	at stock turnover	-\$0.01	21	20	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	4,596.29	10	\$334.75	27%	at stock turnover	\$0.01	4	4	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	7,792.12	18	\$2,031.11	39%	at stock turnover	\$0.03	2	2	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	8,275.48	10	\$495.12	18%	at stock turnover	\$0.01	3	3	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	15,550.78	23	\$15,455.01	20%	at stock turnover	\$0.02	4	4	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	6,465.63	10	\$8,250.00	15%	35%	\$0.11	3	3	AEG research & analysis
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	97,626.64	15	\$3,569.50	15%	75%	\$0.00	51	50	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	27,476.91	23	\$12,626.76	3%	at stock turnover	\$0.01	0	0	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	22,453.82	45	\$69,448.50	15%	35%	\$0.30	10	11	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	10,542.48	45	\$38,104.00	15%	35%	\$0.18	5	5	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	8,271.94	20	\$19,250.00	15%	50%	\$0.13	6	7	BEST Simulation
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	32,917.05	45	\$42,405.00	15%	35%	\$0.11	15	15	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	-14,782.77	15	\$258.50	15%	75%	\$0.00	-21	-21	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	12,480.31	3	\$33,550.00	10%	75%	\$0.41	18	19	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	Existing	0.00	14	\$225,835.50	3%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	54,069.64	20	\$220,000.00	10%	25%	\$0.11	12	13	AEG research & analysis
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	6,977.62	23	\$13,634.63	23%	at stock turnover	\$0.02	3	3	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	New	10,865.76	3	\$52,800.00	10%	75%	\$0.73	11	11	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	-1,499.31	15	\$16,901.50	45%	85%	\$75,455.21	-1	-1	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	5,643.65	10	\$8,250.00	15%	50%	\$0.12	3	3	AEG research & analysis
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	97,347.76	15	\$3,569.50	15%	75%	\$0.00	32	32	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	23,623.90	23	\$10,803.57	3%	at stock turnover	\$0.01	2	2	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	-11,027.57	15	\$258.50	15%	75%	\$0.04	-10	-10	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	10,538.55	45	\$69,448.50	15%	50%	\$0.71	6	6	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	9,267.22	45	\$38,104.00	15%	50%	\$0.20	5	5	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	7,289.47	20	\$19,250.00	15%	50%	\$0.14	4	4	BEST Simulation
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	1,245.64	45	\$42,405.00	15%	50%	\$3.22	1	1	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	-12,248.03	15	\$258.50	15%	75%	\$0.00	-11	-11	BEST Simulation
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	New	0.00	14	\$225,835.50	6%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	643.58	15	-\$33.14	100%	at stock turnover	-\$0.02	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	820.55	15	\$262.49	100%	at stock turnover	\$0.00	36	34	EIA 2011
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	5,749.82	5	\$22,715.00	5%	15%	\$0.64	2	3	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	Existing	8,427.26	5	\$4,829.00	15%	50%	\$0.10	9	17	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	14,516.78	12	\$22,000.00	3%	25%	\$0.13	23	60	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	Existing	2,205.42	16	\$3,041.50	1%	3%	\$0.09	0	1	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	15,799.45	10	\$12,589.50	7%	45%	\$0.08	32	78	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	Existing	0.00	25	\$26,647.50	15%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$13,260.50	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	Existing	9,420.18	5	\$6,050.00	10%	25%	\$0.09	3	9	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	193.10	15	\$35.54	100%	at stock turnover	\$0.01	135	133	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	46.39	15	\$5.30	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	5,100.81	15	\$258.50	15%	75%	\$0.00	7	20	BEST Simulation
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	2,332.99	3	\$33,550.00	10%	75%	\$0.40	11	21	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	202.66	6	\$5.61	100%	at stock turnover	\$0.01	0	2	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	164.95	15	\$102.14	100%	at stock turnover	\$0.04	398	289	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	10,971.07	20	\$220,000.00	10%	25%	\$0.11	9	14	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	1,810.70	3	\$52,800.00	10%	75%	\$0.73	6	10	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	643.58	15	-\$33.14	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	820.55	15	\$262.49	100%	at stock turnover	\$0.00	34	33	EIA 2011
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	5,031.01	5	\$22,715.00	5%	15%	\$0.70	1	1	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	New	7,272.25	5	\$4,829.00	15%	50%	\$0.11	5	8	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	11,303.54	12	\$22,000.00	4%	25%	\$0.16	13	20	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	New	1,719.46	16	\$3,041.50	1%	3%	\$0.13	0	0	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	12,310.17	10	\$12,589.50	22%	45%	\$0.10	7	11	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	New	0.00	25	\$26,647.50	18%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	New	0.00	8	\$13,260.50	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	New	7,065.11	5	\$6,050.00	10%	25%	\$0.13	2	3	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	193.10	15	\$35.54	100%	at stock turnover	\$0.01	124	123	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	46.39	15	\$5.30	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	3,743.90	15	\$258.50	15%	75%	\$0.00	4	6	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	202.66	6	\$5.61	100%	at stock turnover	\$0.01	0	2	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	164.95	15	\$102.14	100%	at stock turnover	\$0.04	365	210	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	113.35	7	\$1,397.00	1%	8%	\$0.26	0	0	Developed from RTF
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	Existing	1.66	7	\$33.00	1%	3%	\$3.82	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuId=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	Existing	81.05	10	\$192.50	1%	3%	\$0.35	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	Existing	0.00	13	\$0.00	91%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	Existing	1,698.79	15	\$8,420.50	15%	75%	\$0.59	4	4	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	Existing	1,185.72	10	\$204.87	27%	at stock turnover	\$0.03	1	1	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	Existing	425.50	10	\$439.22	76%	at stock turnover	\$0.15	1	1	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	Existing	16.62	5	\$60.50	15%	75%	\$0.76	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	124.03	7	\$1,397.00	1%	4%	\$0.26	0	0	Developed from RTF
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	New	1,698.79	15	\$8,420.50	15%	75%	\$0.59	3	3	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	New	1,185.72	10	\$245.84	32%	at stock turnover	\$0.03	1	1	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	New	425.50	10	\$527.07	91%	at stock turnover	\$0.19	1	1	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	New	15.88	5	\$60.50	15%	75%	\$0.76	0	0	AEG research & analysis
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$550,000.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	2,099.32	6	\$15.75	100%	at stock turnover	\$0.00	3	4	ENERGY STAR Calculator
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	Existing	110.91	4	\$1,457.50	10%	50%	\$3.61	1	1	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	413.31	6	\$10.24	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	365.15	6	\$24.69	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	327.77	5	\$2,200.00	10%	25%	\$1.56	1	2	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	426.99	6	\$1.86	58%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	455.95	6	\$5.83	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	1,531.98	6	\$11.49	100%	at stock turnover	\$0.00	6	7	Assumed same as Desktop
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	New	0.00	20	\$165,000.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	New	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	2,099.32	6	\$15.75	100%	at stock turnover	\$0.00	3	3	ENERGY STAR Calculator
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	New	115.09	4	\$1,457.50	10%	50%	\$3.42	1	1	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	413.31	6	\$10.24	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	365.15	6	\$24.69	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	341.98	5	\$2,200.00	10%	25%	\$1.47	1	1	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	426.99	6	\$2.04	64%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	455.95	6	\$5.83	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	1,531.98	6	\$11.49	100%	at stock turnover	\$0.00	5	5	Assumed same as Desktop
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,629.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	Existing	2,002.31	9	\$132.64	59%	at stock turnover	\$0.01	1	1	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	Existing	1,190.00	9	\$104.50	0%	10%	\$0.01	0	0	PacificCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$24,860.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$5,379.00	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$16,890.50	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	Existing	9,237.38	10	\$1,576.97	59%	at stock turnover	\$0.04	18	16	EIA 2011
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	New	0.00	5	\$1,545.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	New	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	New	2,002.31	9	\$172.43	77%	at stock turnover	\$0.01	1	1	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	New	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	New	1,190.00	9	\$104.50	0%	10%	\$0.01	0	0	PacifiCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	New	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	New	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	New	0.00	15	\$24,860.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	New	0.00	15	\$5,379.00	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	New	0.00	4	\$16,890.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	New	9,237.38	10	\$2,050.06	77%	at stock turnover	\$0.05	24	22	EIA 2011
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	85%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	0.00	10	\$8,250.00	15%	35%	\$0.00	0	0	AEG research & analysis
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	3,942.06	50	\$137,500.00	15%	25%	\$0.96	2	2	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	459.39	45	\$69,448.50	15%	35%	\$0.30	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	2,148.53	20	\$19,250.00	15%	50%	\$0.13	3	4	BEST Simulation
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	746.67	45	\$42,405.00	15%	35%	\$0.11	1	1	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	4,007.32	3	\$33,550.00	10%	75%	\$0.41	10	12	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	Existing	1,040.71	15	\$12,100.00	15%	75%	\$1.23	2	3	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	Existing	9,933.67	18	\$9,350.00	15%	35%	\$0.09	8	9	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	Existing	24,248.30	20	\$12,200.33	100%	at stock turnover	\$0.05	12	12	BEST Simulation
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	Existing	29,045.58	15	\$940.50	13%	50%	\$0.00	45	50	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	15,077.63	20	\$220,000.00	10%	25%	\$0.11	7	7	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	New	3,066.66	3	\$52,800.00	10%	75%	\$0.73	6	6	6th Plan
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	111.79	15	\$16,901.50	45%	85%	\$75,453.20	0	0	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	0.00	10	\$8,250.00	15%	50%	\$0.00	0	0	AEG research & analysis
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	-803.88	15	\$258.50	15%	75%	\$0.04	-1	-1	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	2,975.84	50	\$137,500.00	15%	25%	\$1.13	1	1	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	242.67	45	\$69,448.50	15%	50%	\$0.71	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	1,648.55	20	\$19,250.00	15%	50%	\$0.14	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	-38.97	45	\$42,405.00	15%	50%	\$3.22	0	0	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	New	793.23	15	\$7,150.00	15%	75%	\$0.93	1	1	6th Plan
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	New	7,658.83	18	\$9,350.00	15%	35%	\$0.12	5	5	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	New	20,167.99	20	\$11,055.96	100%	at stock turnover	\$0.06	3	3	BEST Simulation
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	New	21,901.24	15	\$940.50	19%	50%	\$0.01	20	20	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	22,205.54	5	\$9,900.00	3%	75%	\$0.09	36	39	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	723.43	7	\$1,397.00	1%	8%	\$0.26	0	0	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	Existing	134,865.20	20	\$1,116.50	0%	3%	\$0.00	8	8	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	25,404.15	5	\$2,200.00	1%	10%	\$0.02	5	6	AEG study for LA Dept of Water & Power

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	Existing	59,578.46	5	\$7,062.00	25%	65%	\$0.03	21	22	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	Existing	8,486.75	15	\$506.00	15%	25%	\$0.01	2	2	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	Existing	166.68	15	\$16.50	15%	75%	\$0.01	0	0	DEER
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	15,889.88	15	\$3,278.00	16%	75%	\$0.02	22	22	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	Existing	51,276.48	20	\$37,499.00	1%	30%	\$0.07	34	36	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	Existing	5,139.91	13	\$461.28	50%	at stock turnover	\$0.01	8	8	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	21,272.33	5	\$9,900.00	3%	75%	\$0.09	34	38	AEG study for PN&L
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	62,120.30	20	\$220,000.00	10%	25%	\$0.11	14	14	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	20,757.79	5	\$9,900.00	6%	75%	\$0.09	21	21	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	693.68	7	\$1,397.00	1%	4%	\$0.26	0	0	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	New	134,479.66	20	\$1,116.50	0%	3%	\$0.00	6	6	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	New	25,317.17	5	\$2,200.00	0%	75%	\$0.02	28	28	AEG study for LA Dept of Water & Power
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	New	56,994.32	5	\$7,062.00	25%	65%	\$0.03	13	13	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	New	8,456.57	15	\$506.00	15%	25%	\$0.01	1	1	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	New	166.87	15	\$16.50	15%	75%	\$0.01	0	0	DEER
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	New	15,260.14	15	\$3,278.00	1%	75%	\$0.02	17	17	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	New	49,724.40	20	\$37,499.00	1%	30%	\$0.07	21	21	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	New	5,139.91	13	\$461.28	50%	at stock turnover	\$0.01	8	8	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	21,581.74	5	\$9,900.00	6%	75%	\$0.09	22	22	AEG study for PN&L
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	89,349.61	23	\$132,899.84	8%	at stock turnover	\$0.08	95	91	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	Existing	49,108.86	23	\$15,885.53	5%	at stock turnover	\$0.03	38	39	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	38,164.02	10	\$5,430.00	15%	75%	\$0.02	37	41	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	4,997.30	15	\$14,420.00	15%	75%	\$0.28	4	6	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,196.72	15	\$6,580.00	15%	75%	\$0.51	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	6,710.82	10	\$15,000.00	15%	35%	\$0.08	33	38	AEG research & analysis
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	57,784.90	15	\$23,810.00	15%	25%	\$0.01	8	9	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	11,303.77	15	\$31,750.00	20%	65%	\$0.06	128	142	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	Existing	21,826.80	15	\$32,786.42	2%	at stock turnover	\$0.18	10	10	PacifiCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	78,873.52	23	\$109,367.63	1%	at stock turnover	\$0.07	15	15	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	1,158.37	18	\$170.00	15%	50%	\$1.01	7	9	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	Existing	44,335.76	10	\$54,070.00	18%	75%	\$0.16	250	304	DEER
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	12,108.94	50	\$250,000.00	15%	25%	\$1.03	29	37	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	8,382.46	45	\$126,270.00	15%	35%	\$0.07	42	47	BEST Simulation
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	4,810.52	20	\$820.00	15%	50%	\$0.22	42	47	BEST Simulation
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	11,102.54	45	\$69,280.00	15%	35%	\$0.13	55	62	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	7,139.82	20	\$35,000.00	15%	50%	\$0.09	62	70	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	-6,088.37	45	\$77,100.00	15%	35%	\$0.07	-30	-34	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	Existing	33,576.26	15	\$21,741.95	4%	at stock turnover	\$0.07	43	40	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	12,312.05	3	\$61,000.00	10%	75%	\$0.32	192	224	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	Existing	69,939.62	23	\$136,236.69	44%	at stock turnover	\$0.20	142	143	BEST Simulation
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$237,740.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	8,942.59	3	\$31,750.00	5%	16%	\$0.21	24	33	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	Existing	77,475.62	23	\$24,035.49	21%	at stock turnover	\$0.03	309	308	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	22,440.49	10	\$5,430.00	15%	75%	\$0.03	83	98	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	30,056.92	4	\$5,430.00	15%	75%	\$0.05	109	133	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	4,611.90	15	\$14,420.00	15%	75%	\$0.28	16	21	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,154.72	15	\$66,280.00	15%	75%	\$5.01	4	5	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	87,193.67	23	\$115,698.69	11%	at stock turnover	\$0.07	242	231	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	New	43,581.19	23	\$14,112.19	7%	at stock turnover	\$0.03	87	88	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$5,430.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$14,420.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$6,580.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$15,000.00	15%	50%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$23,810.00	15%	25%	\$10.00	0	0	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	New	21,826.80	15	\$47,809.92	3%	at stock turnover	\$0.27	21	20	PacificCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	76,914.32	23	\$95,212.24	2%	at stock turnover	\$0.07	36	36	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	0.00	18	\$160.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$54,070.00	18%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	0.00	50	\$250,000.00	15%	25%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	0.00	45	\$126,270.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	0.00	45	\$69,280.00	15%	50%	\$10.00	0	0	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$35,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	0.00	45	\$77,100.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	New	29,218.46	15	\$20,644.81	6%	at stock turnover	\$0.08	66	62	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	New	68,258.72	23	\$118,603.66	59%	at stock turnover	\$0.18	363	367	BEST Simulation
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$237,740.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	New	69,624.24	23	\$21,352.35	29%	at stock turnover	\$0.03	728	725	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$5,430.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$5,430.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$14,420.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$66,280.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	1,725.12	15	\$31,750.00	20%	65%	\$0.06	51	87	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	5,132.54	5	\$3,150.00	15%	25%	\$0.10	33	74	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	1,255.45	10	\$9,260.00	33%	60%	\$0.74	22	50	AEG research & analysis
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	Existing	29,697.73	10	\$14,490.00	15%	30%	\$0.05	300	624	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	960.06	15	-\$59.32	100%	at stock turnover	-\$0.03	6	10	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,224.06	15	\$469.88	100%	at stock turnover	\$0.00	1,835	1,710	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	166.76	15	\$36.83	100%	at stock turnover	\$0.00	149	146	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	40.07	15	\$5.49	100%	at stock turnover	\$0.01	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	1,689.74	3	\$61,000.00	10%	75%	\$0.32	70	123	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	193.26	6	\$6.42	100%	at stock turnover	\$0.01	0	2	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	157.29	15	\$116.88	100%	at stock turnover	\$0.05	576	421	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	1,468.78	3	\$31,750.00	5%	16%	\$0.21	10	28	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$3,150.00	15%	25%	\$10.00	0	0	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$9,260.00	44%	60%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$14,490.00	15%	30%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	960.06	15	-\$59.32	100%	at stock turnover	-\$0.03	7	12	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,224.06	15	\$469.88	100%	at stock turnover	\$0.00	2,249	2,126	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	166.76	15	\$36.83	100%	at stock turnover	\$0.00	182	181	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	40.07	15	\$5.49	100%	at stock turnover	\$0.01	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	193.26	6	\$6.42	100%	at stock turnover	\$0.01	0	3	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	157.29	15	\$116.88	100%	at stock turnover	\$0.04	733	417	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	23,359.79	15	\$92.14	15%	at stock turnover	\$0.00	32	31	Illinois TRM
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	2,380.75	10	\$189.90	30%	at stock turnover	\$0.01	22	19	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	4,036.10	18	\$415.34	15%	at stock turnover	\$0.01	4	4	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	4,286.46	10	\$842.00	59%	at stock turnover	\$0.03	53	46	Developed from RTF "ComCookingConvectionOven" v2.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	23,359.79	15	\$129.00	22%	at stock turnover	\$0.00	63	62	Illinois TRM
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	2,380.75	10	\$265.87	42%	at stock turnover	\$0.02	35	32	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	4,036.10	18	\$581.47	22%	at stock turnover	\$0.02	7	7	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	4,286.46	10	\$1,178.80	82%	at stock turnover	\$0.04	84	76	Developed from RTF "ComCookingConvectionOven" v2.0
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	36,168.73	23	\$90,155.48	8%	at stock turnover	\$0.08	38	36	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	20,086.15	10	\$15,000.00	15%	35%	\$0.08	34	36	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	277,786.72	15	\$23,810.00	15%	25%	\$0.01	99	99	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	34,892.53	15	\$31,750.00	20%	65%	\$0.06	137	139	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	36,479.84	23	\$78,107.79	1%	at stock turnover	\$0.07	7	7	BEST Simulation
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	-2,096.56	18	\$170.00	15%	50%	\$1.03	-4	-5	BEST Simulation
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	136,307.37	45	\$126,270.00	15%	35%	\$0.07	233	242	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	-4,416.66	20	\$820.00	15%	50%	\$0.22	-13	-14	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	33,189.70	45	\$69,280.00	15%	35%	\$0.13	55	59	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	26,043.43	20	\$35,000.00	15%	50%	\$0.09	76	81	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	105,796.94	45	\$77,100.00	15%	35%	\$0.07	183	188	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	39,564.07	3	\$61,000.00	10%	75%	\$0.32	214	228	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	14	\$188,290.00	3%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	28,661.90	3	\$31,750.00	5%	16%	\$0.21	26	30	BEST Simulation
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	31,876.36	23	\$82,154.67	11%	at stock turnover	\$0.07	82	77	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$15,000.00	15%	50%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$23,810.00	15%	25%	\$10.00	0	0	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	25,941.55	23	\$67,998.26	2%	at stock turnover	\$0.07	11	11	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	0.00	18	\$160.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	0.00	45	\$126,270.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	0.00	45	\$69,280.00	15%	50%	\$10.00	0	0	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$35,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	0.00	45	\$77,100.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	New	0.00	14	\$188,290.00	6%	75%	\$10.00	0	0	DEER
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	4,609.74	15	\$31,750.00	20%	65%	\$0.06	138	232	BEST Simulation
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	772.35	15	-\$47.72	100%	at stock turnover	-\$0.03	3	5	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	984.73	15	\$378.01	100%	at stock turnover	\$0.00	979	913	EIA 2011
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	26,130.31	5	\$68,660.00	5%	15%	\$0.43	57	123	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	Existing	41,733.23	5	\$4,720.00	15%	50%	\$0.02	349	653	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	27,426.45	12	\$40,000.00	3%	25%	\$0.13	392	844	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	4,151.47	16	\$2,970.00	1%	3%	\$0.05	6	13	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	29,713.60	10	\$12,310.00	7%	45%	\$0.05	539	1,088	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	25	\$123,000.00	15%	25%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Lighting - Timelocks and Timers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$13,550.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	5,047.10	5	\$11,000.00	10%	25%	\$0.30	13	40	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	255.37	15	\$56.40	100%	at stock turnover	\$0.00	4,969	4,884	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	61.35	15	\$8.41	100%	at stock turnover	\$0.01	0	5	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	4,374.21	3	\$61,000.00	10%	75%	\$0.32	183	318	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	256.51	6	\$8.52	100%	at stock turnover	\$0.01	0	7	EIA 2011
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	208.77	15	\$155.13	100%	at stock turnover	\$0.05	1,803	1,318	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,808.01	3	\$31,750.00	5%	16%	\$0.21	27	72	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	772.35	15	-\$47.72	100%	at stock turnover	-\$0.03	4	6	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	984.73	15	\$378.01	100%	at stock turnover	\$0.00	1,200	1,134	EIA 2011
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$68,660.00	5%	15%	\$10.00	0	0	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$4,720.00	15%	50%	\$10.00	0	0	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	12	\$40,000.00	4%	25%	\$10.00	0	0	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	New	0.00	16	\$2,970.00	1%	3%	\$10.00	0	0	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$12,310.00	22%	45%	\$10.00	0	0	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	New	0.00	25	\$123,000.00	18%	25%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$13,550.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$11,000.00	10%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	255.37	15	\$56.40	100%	at stock turnover	\$0.00	6,083	6,049	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	61.35	15	\$8.41	100%	at stock turnover	\$0.01	0	6	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	256.51	6	\$8.52	100%	at stock turnover	\$0.01	0	10	EIA 2011
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	208.77	15	\$155.13	100%	at stock turnover	\$0.04	2,295	1,305	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	920.58	7	\$9,320.00	1%	8%	\$0.17	3	3	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	Existing	13.42	7	\$200.00	1%	3%	\$2.85	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	Existing	655.45	10	\$1,300.00	1%	3%	\$0.30	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	Existing	2,747.21	15	\$13,950.00	15%	75%	\$0.61	37	37	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	1,604.08	10	\$10.26	1%	at stock turnover	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	Existing	575.64	10	\$31.27	4%	at stock turnover	\$0.01	1	1	Hawaii TRM
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	Existing	22.40	5	\$400.00	15%	75%	\$3.70	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	2,515.36	3	\$31,750.00	5%	16%	\$0.21	20	19	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	0.00	7	\$9,320.00	1%	4%	\$10.00	0	0	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	New	0.00	7	\$10.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	New	0.00	13	\$0.00	72%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$13,950.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	1,604.08	10	\$11.86	1%	at stock turnover	\$0.00	1	1	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	New	575.64	10	\$36.12	5%	at stock turnover	\$0.01	1	1	Hawaii TRM
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$400.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	9,069.03	6	\$68.05	100%	at stock turnover	\$0.00	115	122	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	Existing	670.95	4	\$2,650.00	10%	50%	\$1.08	57	63	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,785.49	6	\$44.26	100%	at stock turnover	\$0.01	23	24	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,577.44	6	\$106.65	100%	at stock turnover	\$0.01	8	8	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	1,990.93	5	\$4,000.00	10%	25%	\$0.47	65	71	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,844.60	6	\$3.88	28%	at stock turnover	\$0.00	13	13	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,969.70	6	\$25.18	100%	at stock turnover	\$0.00	6	6	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	6,618.13	6	\$32.77	66%	at stock turnover	\$0.00	176	181	Assumed same as Desktop
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	9,069.03	6	\$68.05	100%	at stock turnover	\$0.00	131	129	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$2,650.00	10%	50%	\$10.00	0	0	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,785.49	6	\$44.26	100%	at stock turnover	\$0.01	26	25	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,577.44	6	\$106.65	100%	at stock turnover	\$0.01	9	9	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$4,000.00	10%	25%	\$10.00	0	0	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,844.60	6	\$4.65	34%	at stock turnover	\$0.00	16	16	Assumed same as Desktop
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,969.70	6	\$25.18	100%	at stock turnover	\$0.00	6	5	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	6,618.13	6	\$40.97	83%	at stock turnover	\$0.00	193	188	Assumed same as Desktop
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$17,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	Existing	4,382.15	9	\$106.45	22%	at stock turnover	\$0.00	35	32	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	Existing	7,933.33	9	\$700.00	0%	10%	\$0.01	5	5	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$41,280.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$35,840.00	0%	0%	\$10.00	0	0	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$10,700.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	Existing	20,216.44	10	\$1,265.66	22%	at stock turnover	\$0.01	116	102	EIA 2011
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$10,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	New	4,382.15	9	\$149.04	30%	at stock turnover	\$0.01	55	50	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	New	0.00	9	\$700.00	0%	10%	\$10.00	0	0	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$41,280.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$35,840.00	0%	0%	\$10.00	0	0	AEO 2013
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$10,700.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	New	20,216.44	10	\$1,771.92	30%	at stock turnover	\$0.02	222	203	EIA 2011
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	4,657.83	15	\$31,750.00	20%	65%	\$0.06	66	78	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	859.22	18	\$170.00	15%	50%	\$0.99	6	9	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	5,300.20	50	\$250,000.00	15%	25%	\$1.03	16	22	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	4,639.87	45	\$126,270.00	15%	35%	\$0.07	29	35	BEST Simulation
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	-102.72	20	\$820.00	15%	50%	\$0.22	-1	-1	BEST Simulation
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	2,937.73	20	\$35,000.00	15%	50%	\$0.09	32	38	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	1,025.25	45	\$77,100.00	15%	35%	\$0.07	6	8	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	5,387.32	3	\$61,000.00	10%	75%	\$0.32	107	131	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,902.68	3	\$31,750.00	5%	16%	\$0.21	13	19	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	Existing	1,399.28	15	\$22,000.00	15%	25%	\$1.70	4	5	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	Existing	13,340.75	18	\$17,000.00	15%	35%	\$0.13	82	100	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	Existing	46,316.69	20	\$44,822.76	100%	at stock turnover	\$0.10	174	175	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	Existing	38,011.48	15	\$7,190.00	13%	25%	\$0.02	143	165	BEST Simulation
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$15,000.00	15%	50%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	0.00	18	\$160.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	0.00	50	\$250,000.00	15%	25%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	0.00	45	\$126,270.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$35,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	0.00	45	\$77,100.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$13,000.00	15%	25%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	New	0.00	18	\$17,000.00	15%	35%	\$10.00	0	0	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	New	43,431.09	20	\$41,844.48	100%	at stock turnover	\$0.10	129	131	BEST Simulation
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$7,190.00	19%	25%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	14,519.52	5	\$18,000.00	3%	75%	\$0.22	100	166	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	7,566.25	7	\$9,320.00	1%	8%	\$0.17	5	8	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	Existing	91,208.04	20	\$7,450.00	0%	1%	\$0.01	9	13	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	16,146.45	5	\$4,000.00	1%	10%	\$0.05	15	23	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	Existing	41,724.94	5	\$2,210.00	25%	65%	\$0.01	62	98	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	Existing	5,392.29	15	\$990.00	15%	25%	\$0.02	5	8	Hawaii TRM
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	Existing	421.28	15	\$30.00	15%	75%	\$0.01	3	4	DEER
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	10,110.90	15	\$11,410.00	16%	75%	\$0.11	59	92	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	Existing	34,873.23	20	\$83,330.00	1%	30%	\$0.19	99	156	BEST Simulation
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	Existing	140,764.16	14	\$22,424.24	53%	at stock turnover	\$0.02	1,321	1,273	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	15,128.79	5	\$18,000.00	3%	75%	\$0.22	105	171	AEG study for PN&L
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$18,000.00	6%	75%	\$10.00	0	0	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	0.00	7	\$9,320.00	1%	4%	\$10.00	0	0	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$7,450.00	0%	1%	\$10.00	0	0	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$4,000.00	0%	75%	\$10.00	0	0	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,210.00	25%	65%	\$10.00	0	0	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$990.00	15%	25%	\$10.00	0	0	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$30.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$11,410.00	1%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$83,330.00	1%	30%	\$10.00	0	0	BEST Simulation
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	New	140,764.16	14	\$22,424.24	53%	at stock turnover	\$0.02	1,678	1,633	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$18,000.00	6%	75%	\$10.00	0	0	AEG study for PN&L
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	7,970.76	23	\$5,397.74	7%	at stock turnover	\$0.17	7	6	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	Existing	4,031.41	23	\$1,033.79	0%	at stock turnover	\$0.03	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	3,183.65	10	\$814.55	15%	75%	\$0.04	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	162.26	15	\$532.95	15%	75%	\$0.30	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	Existing	75.25	15	\$888.25	15%	75%	\$1.08	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	Existing	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	589.79	10	\$825.00	15%	35%	\$0.08	6	7	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	5,061.41	15	\$3,571.70	15%	75%	\$0.02	4	4	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,022.61	15	\$1,746.25	20%	65%	\$0.05	26	29	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	Existing	1,950.28	15	\$11,707.53	7%	at stock turnover	\$0.74	7	6	PacifiCorp Program Data
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	7,030.51	23	\$4,442.11	3%	at stock turnover	\$0.14	2	2	BEST Simulation
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	-39.91	18	\$23.65	15%	50%	\$0.03	-1	-1	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	Existing	4,094.30	10	\$7,297.95	18%	75%	\$0.24	50	61	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	2,299.31	15	\$260.15	15%	75%	\$0.08	78	86	BEST Simulation
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	1,077.13	50	\$13,750.00	15%	25%	\$0.58	6	7	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	-8.40	45	\$6,944.85	15%	35%	\$0.14	0	0	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	978.06	45	\$3,810.40	15%	35%	\$0.13	11	12	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	627.50	20	\$1,925.00	15%	50%	\$0.09	12	14	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	-530.71	45	\$4,240.50	15%	35%	\$0.09	-6	-7	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	Existing	3,000.12	15	\$1,942.70	0%	at stock turnover	\$0.07	3	3	BEST Simulation
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	1,095.02	3	\$3,355.00	10%	75%	\$0.27	38	44	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	Existing	6,248.90	23	\$5,538.20	77%	at stock turnover	\$0.09	43	44	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$32,089.75	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	Existing	6,263.08	23	\$1,564.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$532.95	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$2,450.25	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	4,582.80	20	\$22,000.00	10%	25%	\$0.07	26	26	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	7,740.50	23	\$4,963.68	8%	at stock turnover	\$0.16	9	8	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	New	3,962.05	23	\$928.23	0%	at stock turnover	\$0.02	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	2,899.15	10	\$814.55	15%	75%	\$0.04	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	181.79	15	\$532.95	15%	75%	\$0.26	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$888.25	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	New	841.37	3	\$5,280.00	10%	75%	\$0.48	20	20	6th Plan
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	New	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	457.59	10	\$825.00	15%	50%	\$0.09	6	6	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	4,006.67	15	\$3,571.70	15%	75%	\$0.02	2	2	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	New	829.86	15	\$1,746.25	20%	65%	\$0.06	14	14	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	New	1,950.28	15	\$15,186.81	8%	at stock turnover	\$0.96	7	6	PacificCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	6,827.39	23	\$4,084.90	4%	at stock turnover	\$0.13	3	3	BEST Simulation
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	20.57	18	\$22.55	15%	35%	\$0.01	0	0	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	New	3,139.14	10	\$7,297.95	18%	75%	\$0.30	9	10	DEER
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	1,874.05	15	\$260.15	15%	75%	\$0.09	42	42	BEST Simulation
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	821.35	50	\$13,750.00	15%	25%	\$0.72	3	3	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	-88.29	45	\$6,944.85	15%	50%	\$0.28	-1	-1	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	245.79	20	\$45.10	15%	50%	\$0.02	3	3	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	752.54	45	\$3,810.40	15%	50%	\$0.15	10	10	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	484.95	20	\$1,925.00	15%	50%	\$0.10	6	6	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	-32.07	45	\$4,240.50	15%	50%	\$2.62	0	0	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	New	2,610.74	15	\$1,844.66	0%	at stock turnover	\$0.08	3	3	BEST Simulation
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	New	6,068.55	23	\$5,092.84	93%	at stock turnover	\$0.09	52	53	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$32,089.75	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	New	6,022.31	23	\$1,404.45	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$532.95	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$2,450.25	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	190.13	15	\$1,746.25	20%	65%	\$0.05	11	17	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	511.79	5	\$1,257.30	15%	25%	\$0.41	6	13	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	264.09	10	\$979.00	33%	60%	\$0.38	9	18	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	Existing	3,015.61	10	\$1,532.85	15%	30%	\$0.06	57	110	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	897.93	15	-\$28.89	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,144.84	15	\$228.89	100%	at stock turnover	\$0.00	326	304	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	176.53	15	\$37.16	100%	at stock turnover	\$0.01	102	98	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	40.26	15	\$2.88	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	174.88	3	\$3,355.00	10%	75%	\$0.27	14	23	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	153.71	6	\$2.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	125.11	15	\$48.42	100%	at stock turnover	\$0.03	49	36	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
			Restaurant bldg.										
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	800.10	20	\$22,000.00	10%	25%	\$0.07	8	12	AEG research & analysis
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	136.39	3	\$5,280.00	10%	75%	\$0.48	6	9	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	156.13	15	\$1,746.25	20%	65%	\$0.06	5	7	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	412.86	5	\$1,257.30	15%	25%	\$0.45	3	4	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	343.54	10	\$979.00	44%	60%	\$0.26	4	5	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	New	2,464.14	10	\$1,532.85	15%	30%	\$0.06	26	36	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	897.93	15	-\$28.89	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,144.84	15	\$228.89	100%	at stock turnover	\$0.00	242	230	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	176.53	15	\$37.16	100%	at stock turnover	\$0.01	72	70	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	40.26	15	\$2.88	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	153.71	6	\$2.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	125.11	15	\$48.42	100%	at stock turnover	\$0.02	35	20	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	40,837.04	15	\$548.90	53%	at stock turnover	-\$0.01	338	331	Illinois TRM
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	8,323.94	10	\$197.64	9%	at stock turnover	\$0.00	41	35	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	7,055.81	18	\$2,474.22	53%	at stock turnover	\$0.04	45	45	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	14,986.99	10	\$759.72	15%	at stock turnover	\$0.01	84	73	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	40,837.04	15	\$1,045.32	100%	at stock turnover	-\$0.01	527	513	Illinois TRM
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	8,323.94	10	\$376.38	17%	at stock turnover	\$0.01	52	47	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	7,055.81	18	\$4,711.92	100%	at stock turnover	\$0.07	60	60	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	14,986.99	10	\$1,446.82	29%	at stock turnover	\$0.01	107	97	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	1,489.49	23	\$14,515.54	7%	at stock turnover	\$0.17	1	1	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	876.77	10	\$825.00	15%	35%	\$0.08	1	1	AEG research & analysis
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	13,027.09	15	\$3,571.70	15%	75%	\$0.02	0	0	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,452.13	15	\$1,746.25	20%	65%	\$0.05	5	5	BEST Simulation
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	1,893.93	23	\$11,985.97	3%	at stock turnover	\$0.14	1	1	BEST Simulation
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	-203.80	18	\$23.65	15%	50%	\$0.03	-1	-1	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	-1,785.19	15	\$260.15	15%	75%	\$0.08	-8	-8	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	4,299.33	45	\$6,944.85	15%	35%	\$0.14	6	6	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	1,429.01	45	\$3,810.40	15%	35%	\$0.13	2	2	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	1,136.78	20	\$1,925.00	15%	50%	\$0.09	3	3	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	4,436.54	45	\$4,240.50	15%	35%	\$0.09	6	6	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	1,684.61	3	\$3,355.00	10%	75%	\$0.27	8	8	6th Plan
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	Existing	0.00	14	\$43,107.35	3%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	7,452.54	20	\$22,000.00	10%	25%	\$0.07	4	5	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	1,714.76	23	\$13,972.05	8%	at stock turnover	\$0.16	2	1	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	New	1,520.55	3	\$5,280.00	10%	75%	\$0.48	4	4	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	794.57	10	\$825.00	15%	50%	\$0.09	1	1	AEG research & analysis
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	13,036.12	15	\$3,571.70	15%	75%	\$0.02	0	0	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	New	1,349.55	15	\$1,746.25	20%	65%	\$0.06	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	2,295.73	23	\$11,022.13	4%	at stock turnover	\$0.13	1	1	BEST Simulation
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	-90.64	18	\$22.55	15%	35%	\$0.01	0	0	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	-1,512.39	15	\$260.15	15%	75%	\$0.09	-4	-4	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	2,176.04	45	\$6,944.85	15%	50%	\$0.28	3	3	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	-34.85	20	\$45.10	15%	50%	\$0.02	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	1,304.64	45	\$3,810.40	15%	50%	\$0.15	2	2	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	1,026.25	20	\$1,925.00	15%	50%	\$0.10	1	1	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	174.29	45	\$4,240.50	15%	50%	\$2.62	0	0	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	New	0.00	14	\$43,107.35	6%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	449.27	15	\$1,746.25	20%	65%	\$0.05	24	40	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	535.92	15	-\$17.25	100%	at stock turnover	-\$0.01	0	1	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	683.29	15	\$136.61	100%	at stock turnover	\$0.00	108	101	EIA 2011
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	2,270.58	5	\$7,425.55	5%	15%	\$0.52	9	19	Illinois TRM
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	Existing	3,606.67	5	\$551.65	15%	50%	\$0.03	53	101	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	2,491.99	12	\$2,200.00	3%	25%	\$0.08	61	139	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	Existing	374.04	16	\$347.60	1%	3%	\$0.07	1	2	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	2,673.08	10	\$1,438.80	7%	45%	\$0.06	82	179	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	Existing	0.00	25	\$6,765.00	15%	25%	\$10.00	0	0	DEER

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Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$1,559.25	7%	15%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	Existing	648.70	5	\$605.00	10%	25%	\$0.12	3	9	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	229.69	15	\$48.34	100%	at stock turnover	\$0.01	782	753	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	52.38	15	\$3.74	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	399.00	3	\$3,355.00	10%	75%	\$0.27	29	52	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	226.95	6	\$3.93	100%	at stock turnover	\$0.00	0	2	EIA 2011
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	184.71	15	\$71.49	100%	at stock turnover	\$0.03	391	284	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	1,904.13	20	\$22,000.00	10%	25%	\$0.07	19	28	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	318.57	3	\$5,280.00	10%	75%	\$0.48	14	20	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	359.16	15	\$1,746.25	20%	65%	\$0.06	11	16	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	535.92	15	-\$17.25	100%	at stock turnover	-\$0.01	0	1	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	683.29	15	\$136.61	100%	at stock turnover	\$0.00	81	76	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	1,836.95	5	\$7,425.55	5%	15%	\$0.57	4	6	Illinois TRM
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	New	2,935.63	5	\$551.65	15%	50%	\$0.03	24	33	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	1,988.08	12	\$2,200.00	4%	25%	\$0.09	27	39	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	New	298.37	16	\$347.60	1%	3%	\$0.08	0	1	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	2,125.96	10	\$1,438.80	22%	45%	\$0.06	15	22	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	New	0.00	25	\$6,765.00	18%	25%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$1,559.25	7%	15%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	New	465.94	5	\$605.00	10%	25%	\$0.16	1	2	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	229.69	15	\$48.34	100%	at stock turnover	\$0.01	557	541	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	52.38	15	\$3.74	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	226.95	6	\$3.93	100%	at stock turnover	\$0.00	0	1	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	184.71	15	\$71.49	100%	at stock turnover	\$0.02	278	160	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	21.41	7	\$1,397.55	1%	4%	\$0.29	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	Existing	0.31	7	\$30.80	1%	3%	\$18.86	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	Existing	15.31	10	\$194.70	1%	3%	\$1.90	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	Existing	0.00	13	\$0.00	20%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	Existing	559.05	15	\$16,305.30	15%	75%	\$3.49	4	4	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	88.22	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	Existing	15.83	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	21.47	7	\$1,397.55	1%	2%	\$0.29	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	New	0.31	7	\$1.65	1%	3%	\$1.01	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	New	559.05	15	\$16,305.30	15%	75%	\$3.49	3	3	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	New	88.22	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	New	15.83	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$55,000.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	517.38	6	\$3.88	100%	at stock turnover	\$0.00	12	12	ENERGY STAR Calculator
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	Existing	2.30	4	\$145.75	10%	50%	\$17.47	0	0	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	81.49	6	\$2.02	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	89.99	6	\$6.08	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	6.72	5	\$220.00	10%	25%	\$7.53	0	0	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	210.46	6	\$1.58	100%	at stock turnover	\$0.00	9	9	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	224.74	6	\$2.87	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	755.11	6	\$2.83	50%	at stock turnover	\$0.00	31	32	Assumed same as Desktop
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,500.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	517.38	6	\$3.88	100%	at stock turnover	\$0.00	8	8	ENERGY STAR Calculator
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	New	2.19	4	\$145.75	10%	50%	\$18.16	0	0	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	81.49	6	\$2.02	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	89.99	6	\$6.08	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	6.42	5	\$220.00	10%	25%	\$7.82	0	0	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	210.46	6	\$1.58	100%	at stock turnover	\$0.00	6	6	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	224.74	6	\$2.87	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	755.11	6	\$3.12	55%	at stock turnover	\$0.00	18	17	Assumed same as Desktop
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,631.20	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	Existing	1,742.01	9	\$190.63	97%	at stock turnover	\$0.02	29	26	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	Existing	726.84	8	\$2,542.65	0%	75%	\$0.57	2	2	Developed from RTF
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	Existing	1,190.00	9	\$105.05	0%	75%	\$0.01	4	4	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	Existing	1,007.69	15	\$7,360.65	0%	75%	\$0.78	134	151	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	Existing	2,192.36	15	\$5,376.25	0%	75%	\$0.28	298	321	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	Existing	1,982.15	4	\$2,121.90	0%	75%	\$0.29	72	74	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	Existing	4,018.25	10	\$1,133.20	97%	at stock turnover	\$0.06	192	168	EIA 2011
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$1,547.15	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	New	1,742.01	9	\$195.92	100%	at stock turnover	\$0.02	19	17	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	New	731.79	8	\$2,542.65	0%	75%	\$0.57	1	1	Developed from RTF
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	New	1,190.00	9	\$105.05	0%	75%	\$0.01	2	2	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	New	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	New	986.25	15	\$7,360.65	0%	75%	\$0.80	70	71	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	New	2,138.03	15	\$5,376.25	0%	75%	\$0.29	153	156	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	New	1,988.93	4	\$2,121.90	0%	75%	\$0.29	37	37	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	New	4,018.25	10	\$1,164.65	100%	at stock turnover	\$0.07	135	124	EIA 2011
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$825.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	569.80	15	\$1,746.25	20%	65%	\$0.05	15	17	BEST Simulation
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	309.02	18	\$23.65	15%	50%	\$0.03	7	8	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	-153.28	15	\$260.15	15%	75%	\$0.08	-5	-6	BEST Simulation
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	656.57	50	\$13,750.00	15%	25%	\$0.58	4	5	6th Plan
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	0.00	45	\$6,944.85	15%	35%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	358.00	20	\$1,925.00	15%	50%	\$0.09	7	8	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	123.71	45	\$4,240.50	15%	35%	\$0.09	1	2	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	667.47	3	\$3,355.00	10%	75%	\$0.27	24	29	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	Existing	173.33	15	\$1,210.00	15%	25%	\$0.74	1	1	6th Plan
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	Existing	1,648.00	18	\$935.00	15%	35%	\$0.06	19	22	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	Existing	3,743.41	20	\$6,204.59	100%	at stock turnover	\$0.17	34	34	BEST Simulation
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	Existing	4,256.09	15	\$1,646.15	13%	50%	\$0.05	94	103	BEST Simulation
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	2,469.11	20	\$22,000.00	10%	25%	\$0.07	12	12	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	New	514.74	3	\$5,280.00	10%	75%	\$0.48	11	11	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$825.00	15%	50%	\$0.00	0	0	AEG research & analysis
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	New	484.83	15	\$1,746.25	20%	65%	\$0.06	7	7	BEST Simulation
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	247.51	18	\$22.55	15%	35%	\$0.01	2	2	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	-128.96	15	\$260.15	15%	75%	\$0.09	-3	-3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	501.96	50	\$13,750.00	15%	25%	\$0.72	2	2	6th Plan
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	0.00	45	\$6,944.85	15%	50%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$45.10	15%	50%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	276.43	20	\$1,925.00	15%	50%	\$0.10	3	3	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	-6.57	45	\$4,240.50	15%	50%	\$2.62	0	0	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	New	133.15	15	\$715.00	15%	25%	\$0.54	0	0	6th Plan
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	New	1,310.98	18	\$935.00	15%	35%	\$0.07	9	9	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	New	3,226.10	20	\$5,980.95	100%	at stock turnover	\$0.19	12	12	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	New	3,094.68	15	\$1,646.15	19%	50%	\$0.06	31	31	BEST Simulation
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	2,983.04	5	\$990.00	3%	75%	\$0.07	48	52	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	750.05	7	\$1,397.55	1%	4%	\$0.29	0	1	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	Existing	18,194.42	20	\$1,117.60	0%	3%	\$0.01	13	13	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,429.16	5	\$220.00	1%	10%	\$0.02	7	7	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	Existing	8,222.97	5	\$551.65	25%	65%	\$0.02	28	29	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$276.65	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	Existing	16.64	15	\$1.65	15%	75%	\$0.01	0	0	DEER
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	2,002.93	15	\$1,036.20	16%	75%	\$0.06	27	28	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	Existing	6,347.08	20	\$25,000.25	1%	30%	\$0.34	41	45	BEST Simulation
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	Existing	693.88	13	\$35.95	58%	at stock turnover	\$0.01	11	11	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,114.79	5	\$990.00	3%	75%	\$0.07	51	54	AEG study for PN&L
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	8,687.48	20	\$22,000.00	10%	25%	\$0.07	16	16	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	2,903.22	5	\$990.00	6%	75%	\$0.07	24	24	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	717.38	7	\$1,397.55	1%	2%	\$0.29	0	0	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	New	18,142.77	20	\$1,117.60	0%	4%	\$0.01	8	8	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,415.41	5	\$220.00	0%	75%	\$0.02	31	31	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	New	7,891.97	5	\$551.65	25%	65%	\$0.02	14	14	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$276.65	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	New	16.65	15	\$1.65	15%	75%	\$0.01	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	1,949.46	15	\$1,036.20	1%	75%	\$0.06	17	17	BEST Simulation
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	New	6,045.07	20	\$25,000.25	1%	30%	\$0.34	21	21	BEST Simulation
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	New	693.88	13	\$35.95	61%	at stock turnover	\$0.01	9	8	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,018.73	5	\$990.00	6%	75%	\$0.07	25	25	AEG study for PN&L
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	11,605.96	23	\$144,736.46	5%	at stock turnover	\$0.12	10	9	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft School bldg.	Existing	11,256.47	23	\$23,893.58	39%	at stock turnover	\$0.22	100	101	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	7,984.68	10	\$813.00	15%	75%	\$0.01	116	130	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	2,216.03	15	\$1,110.00	15%	75%	\$0.05	32	37	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	Existing	362.16	15	\$4,557.00	15%	75%	\$1.16	5	6	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	4,676.72	15	\$23,400.00	45%	85%	\$2.09	83	99	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Destratification Fans (HVLS)	per 30,000 sqft School bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	1,164.32	10	\$4,500.00	15%	35%	\$0.11	13	14	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	Existing	1,954.81	15	\$9,525.00	20%	65%	\$0.09	48	53	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	Existing	2,832.51	15	\$12,893.24	0%	at stock turnover	\$0.56	7	7	PacifiCorp Program Data
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	10,221.11	23	\$118,964.48	4%	at stock turnover	\$0.08	3	3	BEST Simulation
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	899.59	18	\$120.00	15%	50%	\$0.02	17	20	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	Existing	8,100.30	10	\$37,434.00	18%	75%	\$0.58	99	124	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	2,091.45	50	\$75,000.00	15%	25%	\$1.66	11	14	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	298.62	45	\$37,881.00	15%	35%	\$0.29	3	4	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	2,677.22	20	\$246.00	15%	35%	\$0.01	30	32	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	1,926.37	45	\$20,784.00	15%	35%	\$0.19	21	23	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	1,238.77	20	\$10,500.00	15%	50%	\$0.14	23	26	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	-1,052.96	45	\$23,130.00	15%	35%	\$0.09	-11	-13	BEST Simulation
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	Existing	4,356.49	15	\$24,668.17	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	Existing	2,284.38	3	\$18,300.00	10%	75%	\$0.46	79	90	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	Existing	3,815.25	23	\$28,558.24	26%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	Existing	0.00	15	\$164,607.00	15%	75%	\$10.00	0	0	DEER
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	1,660.06	3	\$9,525.00	2%	22%	\$0.30	18	23	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	Existing	22,745.38	23	\$36,152.03	10%	at stock turnover	\$0.16	7	7	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	6,001.24	10	\$813.00	15%	75%	\$0.02	22	27	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	Existing	9,106.43	4	\$813.00	15%	75%	\$0.02	33	42	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	3,246.34	15	\$1,110.00	15%	75%	\$0.03	12	15	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	Existing	407.93	15	\$5,097.00	15%	75%	\$1.08	1	2	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	7,094.90	20	\$120,000.00	10%	25%	\$0.18	16	17	AEG research & analysis
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	10,641.35	23	\$148,217.04	6%	at stock turnover	\$0.13	5	4	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per 30,000 sqft School bldg.	New	830.12	23	\$10,164.12	41%	at stock turnover	\$1.27	3	3	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	5,475.22	10	\$813.00	15%	75%	\$0.02	22	22	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	2,249.97	15	\$1,110.00	15%	75%	\$0.05	9	9	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	New	221.76	15	\$4,557.00	15%	75%	\$1.87	1	1	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	New	1,461.27	3	\$28,800.00	10%	75%	\$0.84	15	15	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	1,079.00	15	\$23,400.00	45%	85%	\$37.93	6	6	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Cooling	Destratification Fans (HVLS)	per 30,000 sqft School bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	770.40	10	\$4,500.00	15%	50%	\$0.13	4	4	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	New	1,302.00	15	\$9,525.00	20%	65%	\$0.10	9	9	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	New	2,832.51	15	\$14,182.56	0%	at stock turnover	\$0.61	3	3	PacificCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	9,378.42	23	\$121,825.30	5%	at stock turnover	\$0.09	4	5	BEST Simulation
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	541.31	18	\$120.00	15%	35%	\$0.08	2	2	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	New	5,063.74	10	\$37,434.00	18%	75%	\$0.92	7	7	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	1,334.57	50	\$75,000.00	15%	25%	\$2.61	2	2	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	-480.58	45	\$37,881.00	15%	50%	\$0.57	-3	-3	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	1,631.48	20	\$246.00	15%	50%	\$0.03	9	9	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	1,234.30	45	\$20,784.00	15%	50%	\$0.21	7	7	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	816.46	20	\$10,500.00	15%	50%	\$0.16	4	4	BEST Simulation
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	-52.28	45	\$23,130.00	15%	50%	\$2.19	0	0	BEST Simulation
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	New	3,931.46	15	\$25,458.92	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	New	3,496.48	23	\$29,245.00	29%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	New	0.00	15	\$164,607.00	15%	75%	\$10.00	0	0	DEER
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	New	1,057.44	3	\$9,525.00	2%	22%	\$0.36	4	4	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	New	16,229.74	23	\$30,757.50	10%	at stock turnover	\$0.19	2	2	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	3,251.77	10	\$813.00	15%	75%	\$0.04	3	3	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	New	4,811.11	4	\$813.00	15%	75%	\$0.04	5	5	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	2,802.09	15	\$1,110.00	15%	75%	\$0.04	3	3	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	New	212.57	15	\$5,097.00	15%	75%	\$2.08	0	0	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	342.85	15	\$9,525.00	20%	65%	\$0.09	20	31	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	909.18	5	\$13,092.00	15%	25%	\$2.46	11	23	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	719.42	10	\$3,381.00	33%	60%	\$0.50	25	49	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	Existing	5,437.13	10	\$5,292.00	15%	30%	\$0.11	106	198	AEG research & analysis
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	335.47	15	-\$23.55	100%	at stock turnover	-\$0.03	1	1	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	427.72	15	\$186.58	100%	at stock turnover	\$0.01	141	132	EIA 2011
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	102.85	15	\$25.81	100%	at stock turnover	\$0.00	733	721	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	24.71	15	\$3.85	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	312.85	3	\$18,300.00	10%	75%	\$0.46	26	41	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	100.55	6	\$3.80	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	81.83	15	\$69.10	100%	at stock turnover	\$0.06	3	2	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	272.80	3	\$9,525.00	2%	22%	\$0.30	7	15	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	1,531.09	20	\$120,000.00	10%	25%	\$0.18	7	10	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	New	261.26	3	\$28,800.00	10%	75%	\$0.84	5	8	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	298.91	15	\$9,525.00	20%	65%	\$0.10	4	6	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	New	768.49	5	\$13,092.00	15%	25%	\$2.65	2	3	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	703.25	10	\$3,381.00	44%	60%	\$0.47	3	5	AEG research & analysis
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	New	4,717.32	10	\$5,292.00	15%	30%	\$0.12	21	32	AEG research & analysis
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	335.47	15	-\$23.55	100%	at stock turnover	-\$0.03	0	0	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	427.72	15	\$186.58	100%	at stock turnover	\$0.01	44	42	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	102.85	15	\$25.81	100%	at stock turnover	\$0.00	229	227	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	24.71	15	\$3.85	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	100.55	6	\$3.80	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	81.83	15	\$69.10	100%	at stock turnover	\$0.05	1	1	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	230.78	3	\$9,525.00	2%	22%	\$0.36	2	3	BEST Simulation
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	Existing	7,435.18	15	\$99.58	52%	at stock turnover	-\$0.01	62	61	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	757.77	10	\$118.46	59%	at stock turnover	\$0.02	25	22	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	Existing	1,284.65	18	\$448.88	52%	at stock turnover	\$0.04	8	8	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	Existing	1,364.34	10	\$294.85	65%	at stock turnover	\$0.03	33	29	Developed from RTF "ComCookingConvectionOven" v2.0
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	New	7,435.18	15	\$139.42	73%	at stock turnover	-\$0.01	31	30	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	New	757.77	10	\$165.85	82%	at stock turnover	\$0.03	10	9	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	New	1,284.65	18	\$628.43	73%	at stock turnover	\$0.05	4	4	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	New	1,364.34	10	\$412.78	91%	at stock turnover	\$0.05	14	12	Developed from RTF "ComCookingConvectionOven" v2.0
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	9,812.24	23	\$22,950.42	5%	at stock turnover	\$0.12	8	7	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	-4,070.39	15	\$23,400.00	45%	85%	\$2.11	-18	-20	BEST Simulation
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	4,406.74	10	\$4,500.00	15%	35%	\$0.11	12	12	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	68,676.03	15	\$3,573.00	15%	25%	\$0.01	60	60	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	Existing	7,519.26	15	\$9,525.00	20%	65%	\$0.09	46	47	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	17,768.78	23	\$20,688.82	4%	at stock turnover	\$0.08	5	5	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	-813.38	18	\$120.00	15%	50%	\$0.02	-4	-4	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	10,579.28	45	\$37,881.00	15%	35%	\$0.29	28	30	BEST Simulation
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	-786.03	20	\$246.00	15%	35%	\$0.01	-2	-2	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	7,281.59	45	\$20,784.00	15%	35%	\$0.19	19	20	BPA
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	5,713.72	20	\$10,500.00	15%	50%	\$0.14	26	28	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	22,800.41	45	\$23,130.00	15%	35%	\$0.09	61	64	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	Existing	8,584.31	3	\$18,300.00	10%	75%	\$0.47	72	78	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	Existing	0.00	14	\$100,317.00	3%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	6,238.44	3	\$9,525.00	2%	22%	\$0.30	16	19	BEST Simulation
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	38,007.14	20	\$120,000.00	10%	25%	\$0.18	19	19	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	9,565.05	23	\$24,233.16	6%	at stock turnover	\$0.13	4	3	BEST Simulation
School	Heating	Commissioning	per 30,000 sqft School bldg.	New	7,718.34	3	\$28,800.00	10%	75%	\$0.84	16	16	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	-1,154.81	15	\$23,400.00	45%	85%	\$37.93	-1	-1	BEST Simulation
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	4,133.48	10	\$4,500.00	15%	50%	\$0.13	5	5	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	68,676.03	15	\$3,573.00	15%	25%	\$0.01	13	13	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	New	6,986.07	15	\$9,525.00	20%	65%	\$0.10	10	10	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	15,701.04	23	\$21,186.33	5%	at stock turnover	\$0.09	7	7	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	-750.65	18	\$120.00	15%	35%	\$0.08	0	0	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	5,838.83	45	\$37,881.00	15%	50%	\$0.57	7	7	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	-732.81	20	\$246.00	15%	50%	\$0.03	-1	-1	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	6,611.46	45	\$20,784.00	15%	50%	\$0.21	8	8	BPA
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	5,338.75	20	\$10,500.00	15%	50%	\$0.16	6	6	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	884.76	45	\$23,130.00	15%	50%	\$2.19	1	1	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	New	0.00	14	\$100,317.00	6%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	New	5,663.91	3	\$9,525.00	2%	22%	\$0.36	5	5	BEST Simulation
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	1,004.15	15	\$9,525.00	20%	65%	\$0.09	55	91	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	851.06	15	-\$59.75	100%	at stock turnover	-\$0.03	1	2	EIA 2011
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,085.09	15	\$473.34	100%	at stock turnover	\$0.01	359	337	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	6,905.04	5	\$14,850.00	5%	15%	\$0.35	28	58	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	Existing	10,925.60	5	\$705.00	15%	50%	\$0.01	166	309	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	5,973.83	12	\$12,000.00	3%	25%	\$0.19	158	329	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	Existing	904.32	16	\$444.00	1%	3%	\$0.04	2	5	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	6,476.31	10	\$1,836.00	7%	45%	\$0.03	217	424	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft School bldg.	Existing	0.00	8	\$2,025.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	Existing	388.26	5	\$3,300.00	10%	25%	\$1.18	1	6	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	286.81	15	\$71.98	100%	at stock turnover	\$0.00	2,319	2,282	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	68.91	15	\$10.74	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	944.21	3	\$18,300.00	10%	75%	\$0.46	73	124	6th Plan
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	343.73	6	\$12.98	100%	at stock turnover	\$0.01	0	1	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	279.76	15	\$236.23	100%	at stock turnover	\$0.06	201	146	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	829.17	3	\$9,525.00	2%	22%	\$0.30	20	51	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	4,897.76	20	\$120,000.00	10%	25%	\$0.18	22	33	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	New	809.46	3	\$28,800.00	10%	75%	\$0.84	16	23	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	886.60	15	\$9,525.00	20%	65%	\$0.10	12	18	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	851.06	15	-\$59.75	100%	at stock turnover	-\$0.03	0	1	EIA 2011
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,085.09	15	\$473.34	100%	at stock turnover	\$0.01	113	106	EIA 2011
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	New	6,023.59	5	\$14,850.00	5%	15%	\$0.38	6	9	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	New	9,513.69	5	\$705.00	15%	50%	\$0.01	33	50	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	5,115.11	12	\$12,000.00	4%	25%	\$0.21	31	47	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	New	798.38	16	\$444.00	1%	3%	\$0.04	0	1	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	New	5,548.91	10	\$1,836.00	22%	45%	\$0.04	17	26	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft School bldg.	New	0.00	8	\$2,025.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	New	231.38	5	\$3,300.00	10%	25%	\$2.22	0	1	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	286.81	15	\$71.98	100%	at stock turnover	\$0.00	724	718	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	68.91	15	\$10.74	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	343.73	6	\$12.98	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	279.76	15	\$236.23	100%	at stock turnover	\$0.05	63	37	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	711.04	3	\$9,525.00	2%	22%	\$0.36	6	8	BEST Simulation
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	304.63	7	\$1,398.00	1%	4%	\$0.25	1	1	Developed from RTF
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	Existing	4.43	7	\$30.00	1%	3%	\$1.29	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	Existing	217.87	10	\$195.00	1%	3%	\$0.13	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	Existing	0.00	13	\$0.00	44%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	Existing	422.85	15	\$96.00	15%	75%	\$0.03	7	7	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	Existing	553.39	10	\$3.54	1%	at stock turnover	\$0.00	0	0	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	Existing	397.18	10	\$32.37	6%	at stock turnover	\$0.01	1	1	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	Existing	15.41	5	\$60.00	15%	75%	\$0.80	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	544.33	3	\$9,525.00	2%	22%	\$0.30	13	12	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	304.66	7	\$1,398.00	1%	2%	\$0.25	0	0	Developed from RTF
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	New	4.46	7	\$3.00	1%	3%	\$0.13	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	New	422.85	15	\$96.00	15%	75%	\$0.03	2	2	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	New	553.39	10	\$4.25	1%	at stock turnover	\$0.00	0	0	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	New	397.18	10	\$38.84	7%	at stock turnover	\$0.01	0	0	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	New	14.75	5	\$60.00	15%	75%	\$0.81	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	New	528.55	3	\$9,525.00	2%	22%	\$0.36	4	4	BEST Simulation
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	2,986.37	6	\$22.41	100%	at stock turnover	\$0.00	69	72	ENERGY STAR Calculator
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	Existing	499.47	4	\$795.00	10%	50%	\$0.43	78	91	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	Existing	235.18	6	\$5.83	100%	at stock turnover	\$0.01	5	6	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	Existing	519.44	6	\$35.12	100%	at stock turnover	\$0.01	5	5	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	Existing	1,525.67	5	\$1,200.00	10%	25%	\$0.18	93	104	5th Plan
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	Existing	121.48	6	\$0.33	36%	at stock turnover	\$0.00	2	2	Assumed same as Desktop
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	Existing	648.61	6	\$8.29	100%	at stock turnover	\$0.00	3	4	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	Existing	871.72	6	\$6.54	100%	at stock turnover	\$0.00	52	54	Assumed same as Desktop
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	New	2,986.37	6	\$22.41	100%	at stock turnover	\$0.00	20	20	ENERGY STAR Calculator
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	New	474.47	4	\$795.00	10%	50%	\$0.44	17	18	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	New	235.18	6	\$5.83	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	New	519.44	6	\$35.12	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	New	1,477.94	5	\$1,200.00	10%	25%	\$0.19	20	21	5th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	New	121.48	6	\$0.33	36%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	New	648.61	6	\$8.29	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	New	871.72	6	\$6.54	100%	at stock turnover	\$0.00	13	13	Assumed same as Desktop
School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	Existing	627.11	9	\$46.34	66%	at stock turnover	\$0.01	7	7	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	Existing	1,704.43	8	\$2,544.00	0%	25%	\$0.26	19	19	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	Existing	1,190.00	9	\$105.00	0%	25%	\$0.01	7	7	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	Existing	210.69	15	\$315.00	0%	25%	\$0.17	11	12	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	Existing	413.68	15	\$5,376.00	0%	25%	\$1.44	21	23	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	Existing	368.24	4	\$4,524.00	0%	25%	\$3.49	1	1	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	Existing	1,446.55	10	\$275.46	66%	at stock turnover	\$0.04	49	43	EIA 2011

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School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	New	627.11	9	\$64.87	92%	at stock turnover	\$0.02	3	3	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	New	1,705.50	8	\$2,544.00	0%	25%	\$0.26	6	6	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	New	1,190.00	9	\$105.00	0%	25%	\$0.01	2	2	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	New	206.43	15	\$315.00	0%	25%	\$0.17	3	3	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	New	405.80	15	\$5,376.00	0%	25%	\$1.47	6	7	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	New	368.73	4	\$4,524.00	0%	25%	\$3.49	0	0	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	New	1,446.55	10	\$385.64	92%	at stock turnover	\$0.06	22	20	EIA 2011
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	Existing	884.43	15	\$9,525.00	20%	65%	\$0.09	20	27	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	483.65	18	\$120.00	15%	50%	\$0.02	9	13	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	1,010.73	50	\$75,000.00	15%	25%	\$1.66	5	8	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	560.40	20	\$10,500.00	15%	50%	\$0.14	10	13	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	194.75	45	\$23,130.00	15%	35%	\$0.09	2	3	BEST Simulation
School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	Existing	1,026.69	3	\$18,300.00	10%	75%	\$0.46	33	45	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	746.05	3	\$9,525.00	2%	22%	\$0.30	7	13	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	Existing	266.86	15	\$6,600.00	15%	75%	\$2.57	8	11	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	Existing	2,545.34	18	\$5,100.00	15%	35%	\$0.20	25	34	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	Existing	12,335.69	20	\$22,466.20	100%	at stock turnover	\$0.19	35	36	BEST Simulation
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	Existing	7,530.71	15	\$3,831.00	13%	50%	\$0.06	151	186	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	3,290.20	20	\$120,000.00	10%	25%	\$0.18	7	7	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	New	669.89	3	\$28,800.00	10%	75%	\$0.84	6	6	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	0.00	15	\$23,400.00	45%	85%	\$10.00	0	0	BEST Simulation
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	New	599.90	15	\$9,525.00	20%	65%	\$0.10	4	4	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	332.51	18	\$120.00	15%	35%	\$0.08	1	1	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	650.20	50	\$75,000.00	15%	25%	\$2.61	1	1	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	0.00	45	\$37,881.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	378.63	20	\$10,500.00	15%	50%	\$0.16	2	2	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	-8.59	45	\$23,130.00	15%	50%	\$2.19	0	0	BEST Simulation

Measure Data and Assumptions

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School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	New	486.82	3	\$9,525.00	2%	22%	\$0.36	2	2	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	New	173.31	15	\$3,900.00	15%	75%	\$2.23	2	2	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	New	1,671.38	18	\$5,100.00	15%	35%	\$0.29	5	5	DEER
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	New	12,507.74	20	\$22,468.30	100%	at stock turnover	\$0.19	4	5	BEST Simulation
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	New	5,190.48	15	\$3,831.00	19%	50%	\$0.09	23	23	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,684.26	5	\$5,400.00	3%	75%	\$0.42	48	52	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	658.91	7	\$1,398.00	1%	4%	\$0.25	0	1	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	Existing	16,596.57	20	\$1,116.00	1%	9%	\$0.01	34	34	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	Existing	2,867.96	5	\$1,200.00	1%	10%	\$0.09	7	7	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	Existing	7,405.22	5	\$993.00	25%	65%	\$0.03	28	29	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	Existing	1,026.68	15	\$66.00	15%	25%	\$0.01	3	3	Hawaii TRM
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	Existing	76.04	15	\$9.00	15%	75%	\$0.01	1	1	DEER
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	Existing	1,794.92	15	\$2,421.00	16%	75%	\$0.15	27	28	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	Existing	6,199.28	20	\$12,501.00	1%	30%	\$0.18	45	47	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	Existing	632.33	13	\$55.19	50%	at stock turnover	\$0.01	11	11	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,571.79	5	\$5,400.00	3%	75%	\$0.42	45	50	AEG study for PN&L
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	8,397.66	20	\$120,000.00	10%	25%	\$0.18	7	7	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,439.86	5	\$5,400.00	6%	75%	\$0.42	9	9	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	625.30	7	\$1,398.00	1%	2%	\$0.25	0	0	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	New	16,550.27	20	\$1,116.00	1%	11%	\$0.01	9	9	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	New	2,890.10	5	\$1,200.00	0%	75%	\$0.09	12	12	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	New	7,362.23	5	\$993.00	25%	65%	\$0.03	6	6	DEER
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	New	1,020.55	15	\$66.00	15%	25%	\$0.01	1	1	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	New	75.95	15	\$9.00	15%	75%	\$0.01	0	0	DEER
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	New	1,741.67	15	\$2,421.00	1%	75%	\$0.15	7	7	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	New	5,842.96	20	\$12,501.00	1%	30%	\$0.19	9	9	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	New	632.33	13	\$55.19	50%	at stock turnover	\$0.01	4	3	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,536.41	5	\$5,400.00	6%	75%	\$0.42	10	10	AEG study for PN&L
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	13,833.18	23	\$22,098.80	11%	at stock turnover	\$0.17	109	94	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,163.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$870.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	4,027.43	15	\$7,800.00	45%	85%	\$7.00	514	600	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	1,072.76	10	\$1,500.00	15%	35%	\$0.06	83	91	AEG research & analysis
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	8,907.01	15	\$3,572.00	15%	75%	\$0.01	9	11	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	1,801.26	15	\$3,175.00	20%	65%	\$0.05	314	345	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	Existing	3,385.03	15	\$6,163.30	0%	at stock turnover	\$0.22	25	24	PacifiCorp Program Data
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	130.13	18	\$23.00	15%	50%	\$0.01	18	20	BEST Simulation
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	Existing	7,301.09	10	\$7,143.00	18%	75%	\$0.14	650	767	DEER
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	1,938.77	50	\$25,000.00	15%	25%	\$0.69	71	90	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	680.53	45	\$12,627.00	15%	35%	\$0.07	52	58	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	1,771.81	45	\$6,928.00	15%	35%	\$0.11	135	151	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	1,139.45	20	\$3,500.00	15%	50%	\$0.08	153	170	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	-970.13	45	\$7,710.00	15%	35%	\$0.06	-75	-83	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	Existing	5,207.21	15	\$3,371.88	1%	at stock turnover	\$0.07	15	14	BEST Simulation
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	1,971.24	3	\$6,100.00	10%	75%	\$0.27	476	546	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	Existing	10,846.05	23	\$22,673.87	72%	at stock turnover	\$0.22	539	544	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$31,410.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	1,428.02	3	\$3,175.00	3%	14%	\$0.17	58	78	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Office bldg.	Existing	12,022.31	23	\$4,795.99	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,163.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$9,941.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	6,818.82	20	\$40,000.00	10%	25%	\$0.11	311	316	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	New	11,428.15	23	\$18,882.65	13%	at stock turnover	\$0.15	270	257	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,163.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$870.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	New	1,316.22	3	\$9,600.00	10%	75%	\$0.49	258	263	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	738.86	10	\$1,500.00	15%	50%	\$0.07	79	80	AEG research & analysis
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	7,145.70	15	\$3,572.00	15%	75%	\$0.01	6	6	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	New	1,248.73	15	\$3,175.00	20%	65%	\$0.06	171	174	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	New	3,385.03	15	\$7,994.92	0%	at stock turnover	\$0.29	30	28	PacifiCorp Program Data
Small Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	10,095.66	23	\$15,538.84	12%	at stock turnover	\$0.07	111	111	BEST Simulation
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	435.15	18	\$22.00	15%	35%	\$0.00	26	27	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	New	4,824.50	10	\$7,143.00	18%	75%	\$0.20	127	128	DEER
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	1,284.84	50	\$25,000.00	15%	25%	\$1.02	39	39	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	-243.54	45	\$12,627.00	15%	50%	\$0.08	-26	-26	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	1,186.19	45	\$6,928.00	15%	50%	\$0.12	126	128	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	784.70	20	\$3,500.00	15%	50%	\$0.09	83	85	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	-50.17	45	\$7,710.00	15%	50%	\$1.51	-5	-5	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	New	4,531.38	15	\$3,201.72	1%	at stock turnover	\$0.08	16	15	BEST Simulation
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	New	8,902.16	23	\$19,374.02	86%	at stock turnover	\$0.23	674	681	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	New	0.00	15	\$31,410.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	953.51	3	\$3,175.00	3%	14%	\$0.21	41	42	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,163.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$9,941.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	77.22	15	\$3,175.00	20%	65%	\$0.05	33	51	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	212.36	5	\$244.00	15%	25%	\$0.19	19	39	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	52.78	10	\$609.00	33%	60%	\$1.13	13	27	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	Existing	1,224.74	10	\$953.00	15%	30%	\$0.08	170	330	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	664.54	15	-\$32.08	100%	at stock turnover	-\$0.02	3	5	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	847.28	15	\$254.10	100%	at stock turnover	\$0.00	805	757	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	227.15	15	\$53.49	100%	at stock turnover	\$0.01	274	268	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	53.15	15	\$5.69	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	70.16	3	\$6,100.00	10%	75%	\$0.27	41	67	6th Plan
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	182.73	6	\$4.74	100%	at stock turnover	\$0.00	0	2	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	148.72	15	\$86.34	100%	at stock turnover	\$0.04	589	428	EIA 2011
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	61.53	3	\$3,175.00	3%	14%	\$0.17	6	15	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	340.03	20	\$40,000.00	10%	25%	\$0.11	28	41	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	58.46	3	\$9,600.00	10%	75%	\$0.49	21	30	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	66.32	15	\$3,175.00	20%	65%	\$0.06	17	24	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	177.61	5	\$244.00	15%	25%	\$0.20	10	14	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	52.08	10	\$609.00	44%	60%	\$0.99	5	7	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	New	1,046.77	10	\$953.00	15%	30%	\$0.09	88	127	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	664.54	15	-\$32.08	100%	at stock turnover	-\$0.02	2	4	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	847.28	15	\$254.10	100%	at stock turnover	\$0.00	649	616	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	227.15	15	\$53.49	100%	at stock turnover	\$0.01	221	218	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	53.15	15	\$5.69	100%	at stock turnover	\$0.01	0	0	EIA 2011
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	182.73	6	\$4.74	100%	at stock turnover	\$0.00	0	2	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	148.72	15	\$86.34	100%	at stock turnover	\$0.03	481	276	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	50.81	3	\$3,175.00	3%	14%	\$0.20	4	6	BEST Simulation
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,889.59	15	\$4.56	4%	at stock turnover	\$0.00	21	20	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	498.33	10	\$4.85	4%	at stock turnover	\$0.00	7	6	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	844.82	18	\$20.57	4%	at stock turnover	\$0.00	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	897.23	10	\$10.91	4%	at stock turnover	\$0.00	9	8	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,889.59	15	\$5.70	5%	at stock turnover	\$0.00	24	23	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	498.33	10	\$6.06	5%	at stock turnover	\$0.00	7	6	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	844.82	18	\$25.72	5%	at stock turnover	\$0.00	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	897.23	10	\$13.64	5%	at stock turnover	\$0.00	8	8	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	1,991.39	23	\$24,901.96	11%	at stock turnover	\$0.17	13	11	BEST Simulation
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	-3,641.14	15	\$7,800.00	45%	85%	\$7.11	-134	-152	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	2,084.24	10	\$1,500.00	15%	35%	\$0.06	46	50	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	33,386.05	15	\$3,572.00	15%	75%	\$0.01	726	726	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	3,554.95	15	\$3,175.00	20%	65%	\$0.05	180	191	BEST Simulation
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	Existing	9,957.72	23	\$11,594.13	10%	at stock turnover	\$0.05	66	66	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	-274.87	18	\$23.00	15%	50%	\$0.01	-11	-12	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	13,859.12	45	\$12,627.00	15%	35%	\$0.07	305	330	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	3,385.39	45	\$6,928.00	15%	35%	\$0.11	73	81	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	2,656.09	20	\$3,500.00	15%	50%	\$0.08	100	111	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	10,781.39	45	\$7,710.00	15%	35%	\$0.06	241	257	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	4,029.73	3	\$6,100.00	10%	75%	\$0.27	280	312	6th Plan
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	Existing	0.00	14	\$46,472.00	3%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	2,919.25	3	\$3,175.00	3%	14%	\$0.17	34	44	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	17,246.48	20	\$40,000.00	10%	25%	\$0.11	183	185	AEG research & analysis
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	New	3,548.78	3	\$9,600.00	10%	75%	\$0.49	163	164	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	1,952.04	10	\$1,500.00	15%	50%	\$0.07	48	49	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	33,368.36	15	\$3,572.00	15%	75%	\$0.01	408	408	Developed from RTF
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	New	3,298.95	15	\$3,175.00	20%	65%	\$0.06	105	106	BEST Simulation
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	8,798.95	23	\$11,872.93	12%	at stock turnover	\$0.07	89	89	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	313.27	18	\$22.00	15%	35%	\$0.00	4	5	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	11,820.84	45	\$12,627.00	15%	50%	\$0.08	294	296	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	3,000.68	45	\$6,928.00	15%	50%	\$0.12	74	75	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	2,422.41	20	\$3,500.00	15%	50%	\$0.09	60	61	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	406.87	45	\$7,710.00	15%	50%	\$1.51	10	10	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	New	0.00	14	\$46,472.00	6%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	2,570.84	3	\$3,175.00	3%	14%	\$0.21	26	26	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	469.03	15	\$3,175.00	20%	65%	\$0.05	189	309	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	646.39	15	-\$31.20	100%	at stock turnover	-\$0.02	6	10	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	824.13	15	\$247.16	100%	at stock turnover	\$0.00	1,559	1,466	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	2,845.25	5	\$6,392.00	5%	15%	\$0.36	82	175	Illinois TRM
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	Existing	4,543.23	5	\$453.00	15%	50%	\$0.02	502	932	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	2,788.42	12	\$4,000.00	3%	25%	\$0.13	538	1,110	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	Existing	418.54	16	\$285.00	1%	3%	\$0.05	7	17	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	3,023.45	10	\$1,182.00	7%	45%	\$0.04	740	1,431	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	Existing	324.86	5	\$1,100.00	10%	25%	\$0.44	12	33	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	231.76	15	\$54.58	100%	at stock turnover	\$0.01	7,334	7,155	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	54.23	15	\$5.81	100%	at stock turnover	\$0.01	0	5	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	445.22	3	\$6,100.00	10%	75%	\$0.27	252	424	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	203.04	6	\$5.27	100%	at stock turnover	\$0.00	0	7	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	165.25	15	\$95.93	100%	at stock turnover	\$0.04	1,683	1,226	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	387.00	3	\$3,175.00	3%	14%	\$0.17	37	94	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,281.98	20	\$40,000.00	10%	25%	\$0.11	190	276	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	378.41	3	\$9,600.00	10%	75%	\$0.49	136	197	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	413.06	15	\$3,175.00	20%	65%	\$0.06	103	150	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	646.39	15	-\$31.20	100%	at stock turnover	-\$0.02	5	8	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	824.13	15	\$247.16	100%	at stock turnover	\$0.00	1,258	1,194	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	2,462.41	5	\$6,392.00	5%	15%	\$0.38	46	66	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	New	3,874.89	5	\$453.00	15%	50%	\$0.02	255	368	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	2,383.55	12	\$4,000.00	4%	25%	\$0.14	271	394	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	New	371.96	16	\$285.00	1%	3%	\$0.06	4	6	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	2,584.68	10	\$1,182.00	22%	45%	\$0.05	152	221	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timelocks and Timers	per 10,000 sqft Small Office bldg.	New	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	New	271.69	5	\$1,100.00	10%	25%	\$0.48	6	11	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	231.76	15	\$54.58	100%	at stock turnover	\$0.01	5,912	5,827	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	54.23	15	\$5.81	100%	at stock turnover	\$0.01	0	5	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	203.04	6	\$5.27	100%	at stock turnover	\$0.00	0	6	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	165.25	15	\$95.93	100%	at stock turnover	\$0.03	1,376	791	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	331.40	3	\$3,175.00	3%	14%	\$0.21	26	38	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	73.79	7	\$1,397.00	1%	4%	\$0.17	1	1	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	Existing	1.08	7	\$31.00	1%	3%	\$5.51	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	Existing	52.55	10	\$195.00	1%	3%	\$0.55	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	Existing	373.35	15	\$3,772.00	15%	75%	\$1.21	24	24	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	Existing	160.41	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	Existing	28.78	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	403.91	3	\$3,175.00	3%	14%	\$0.17	32	31	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	84.26	7	\$1,397.00	1%	2%	\$0.16	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	New	1.23	7	\$2.00	1%	3%	\$0.31	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	New	373.35	15	\$3,772.00	15%	75%	\$1.21	15	15	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	New	160.41	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	New	28.78	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	399.19	3	\$3,175.00	3%	14%	\$0.21	23	23	BEST Simulation
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,873.32	6	\$36.57	100%	at stock turnover	\$0.00	813	859	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	Existing	127.84	4	\$265.00	10%	50%	\$0.58	147	165	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	959.45	6	\$23.78	100%	at stock turnover	\$0.01	160	169	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	847.65	6	\$57.31	100%	at stock turnover	\$0.01	57	60	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	376.34	5	\$400.00	10%	25%	\$0.25	163	182	5th Plan
Small Office	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	495.61	6	\$0.74	20%	at stock turnover	\$0.00	33	35	Assumed same as Desktop
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	1,778.15	6	\$13.34	100%	at stock turnover	\$0.00	776	799	Assumed same as Desktop
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,873.32	6	\$36.57	100%	at stock turnover	\$0.00	610	601	ENERGY STAR Calculator
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	New	140.31	4	\$265.00	10%	50%	\$0.52	90	95	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	959.45	6	\$23.78	100%	at stock turnover	\$0.01	120	118	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	847.65	6	\$57.31	100%	at stock turnover	\$0.01	43	42	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	414.53	5	\$400.00	10%	25%	\$0.22	99	106	5th Plan
Small Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,323.04	6	\$16.92	100%	at stock turnover	\$0.00	32	32	ENERGY STAR Calculator
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,778.15	6	\$13.34	100%	at stock turnover	\$0.00	510	499	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	Existing	342.06	9	\$1.96	5%	at stock turnover	\$0.00	2	2	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	Existing	1,190.00	9	\$105.00	0%	10%	\$0.01	5	5	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$6,824.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$5,376.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$3,274.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	Existing	789.03	10	\$11.66	5%	at stock turnover	\$0.00	14	12	EIA 2011
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	New	0.00	5	\$1,547.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	New	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	New	342.06	9	\$2.35	6%	at stock turnover	\$0.00	2	2	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	New	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	New	1,190.00	9	\$105.00	0%	10%	\$0.01	4	4	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	New	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	New	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	New	0.00	15	\$6,824.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	New	0.00	15	\$5,376.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	New	0.00	4	\$3,274.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	New	789.03	10	\$14.00	6%	at stock turnover	\$0.00	15	14	EIA 2011
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	18.21	15	\$7,800.00	45%	85%	\$6.55	2	3	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	631.78	15	\$3,175.00	20%	65%	\$0.05	110	139	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	313.33	18	\$23.00	15%	50%	\$0.01	43	60	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	721.87	50	\$25,000.00	15%	25%	\$0.69	27	41	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	390.59	45	\$12,627.00	15%	35%	\$0.07	30	38	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	399.23	20	\$3,500.00	15%	50%	\$0.08	53	68	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	139.09	45	\$7,710.00	15%	35%	\$0.06	11	14	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	733.47	3	\$6,100.00	10%	75%	\$0.27	179	233	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	531.34	3	\$3,175.00	3%	14%	\$0.17	22	36	BEST Simulation
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	Existing	190.59	15	\$2,200.00	15%	25%	\$1.23	7	9	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	Existing	1,813.14	18	\$1,700.00	15%	35%	\$0.09	138	177	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	Existing	8,598.59	20	\$8,502.54	100%	at stock turnover	\$0.10	503	509	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	Existing	5,153.53	15	\$1,775.00	13%	25%	\$0.04	238	294	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,211.21	20	\$40,000.00	10%	25%	\$0.11	88	91	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	New	451.61	3	\$9,600.00	10%	75%	\$0.49	78	80	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	New	405.01	15	\$3,175.00	20%	65%	\$0.06	48	50	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	295.50	18	\$22.00	15%	35%	\$0.00	16	16	BEST Simulation
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	440.83	50	\$25,000.00	15%	25%	\$1.02	12	12	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	168.74	45	\$12,627.00	15%	50%	\$0.08	16	16	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	254.46	20	\$3,500.00	15%	50%	\$0.09	24	24	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	-5.77	45	\$7,710.00	15%	50%	\$1.51	-1	-1	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	327.16	3	\$3,175.00	3%	14%	\$0.21	12	13	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	New	116.39	15	\$1,300.00	15%	25%	\$1.11	3	3	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	New	1,123.25	18	\$1,700.00	15%	35%	\$0.14	60	61	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	New	7,768.68	20	\$8,359.55	100%	at stock turnover	\$0.11	344	349	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	New	3,284.91	15	\$1,775.00	19%	25%	\$0.06	48	50	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	820.80	5	\$1,800.00	3%	75%	\$0.39	93	154	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	1,173.87	7	\$1,397.00	1%	4%	\$0.17	6	9	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	Existing	4,745.78	20	\$1,117.00	1%	10%	\$0.02	67	104	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	879.91	5	\$400.00	1%	10%	\$0.09	13	21	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	Existing	2,328.84	5	\$110.00	25%	65%	\$0.01	57	91	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$115.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	Existing	43.60	15	\$3.00	15%	75%	\$0.01	4	7	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	550.62	15	\$1,397.00	16%	75%	\$0.24	52	83	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	Existing	1,754.09	20	\$12,500.00	1%	30%	\$0.52	79	134	BEST Simulation
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	Existing	8,074.45	14	\$1,194.74	60%	at stock turnover	\$0.02	1,138	1,098	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	855.22	5	\$1,800.00	3%	75%	\$0.39	99	159	AEG study for PN&L
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,552.91	20	\$40,000.00	10%	25%	\$0.11	34	48	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	749.70	5	\$1,800.00	6%	75%	\$0.38	46	64	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	1,077.38	7	\$1,397.00	1%	2%	\$0.16	1	1	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	New	4,634.86	20	\$1,117.00	1%	12%	\$0.02	43	60	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	New	855.63	5	\$400.00	0%	75%	\$0.08	58	80	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	New	2,245.30	5	\$110.00	25%	65%	\$0.01	31	42	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	New	0.00	15	\$115.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	New	42.22	15	\$3.00	15%	75%	\$0.01	2	3	DEER
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	New	504.02	15	\$1,397.00	1%	75%	\$0.23	33	46	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	New	1,606.16	20	\$12,500.00	1%	30%	\$0.51	41	57	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	New	8,074.45	14	\$1,194.74	60%	at stock turnover	\$0.02	1,041	1,011	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	779.02	5	\$1,800.00	6%	75%	\$0.38	48	67	AEG study for PN&L
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	12,195.70	23	\$18,140.05	7%	at stock turnover	\$0.05	54	47	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	Existing	6,709.05	23	\$2,170.22	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,442.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$658.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	3,739.50	15	\$7,800.00	45%	85%	\$0.95	280	327	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	821.00	10	\$1,500.00	15%	35%	\$0.09	37	41	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	7,387.04	15	\$2,381.00	15%	75%	\$0.01	18	21	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	1,382.96	15	\$3,175.00	20%	65%	\$0.07	141	155	BEST Simulation
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	10,763.27	23	\$14,924.57	5%	at stock turnover	\$0.04	46	46	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	146.03	18	\$17.00	15%	50%	\$0.02	12	13	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	Existing	6,427.82	10	\$5,407.00	18%	75%	\$0.12	246	290	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	1,474.33	50	\$25,000.00	15%	25%	\$0.89	31	41	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	1,025.53	45	\$12,627.00	15%	35%	\$0.09	46	51	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	603.76	20	\$82.00	15%	50%	\$0.04	48	53	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	1,283.93	45	\$6,928.00	15%	35%	\$0.14	56	64	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	873.48	20	\$3,500.00	15%	50%	\$0.11	68	76	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	-744.86	45	\$7,710.00	15%	35%	\$0.08	-33	-37	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	1,532.60	3	\$6,100.00	10%	75%	\$0.35	217	249	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	Existing	9,554.87	23	\$18,612.10	70%	at stock turnover	\$0.20	204	206	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$23,774.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	1,107.18	3	\$3,175.00	0%	3%	\$0.22	7	10	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	Existing	10,584.40	23	\$3,283.63	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,442.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$6,628.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	6,250.59	20	\$40,000.00	10%	25%	\$0.14	159	162	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	11,901.43	23	\$15,792.20	9%	at stock turnover	\$0.05	75	64	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	New	5,953.88	23	\$1,927.95	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,442.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$658.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	New	1,223.10	3	\$9,600.00	10%	75%	\$0.64	134	137	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	677.49	10	\$1,500.00	15%	50%	\$0.10	40	41	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	5,920.33	15	\$2,381.00	15%	75%	\$0.01	11	11	Developed from RTF
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	New	1,145.00	15	\$3,175.00	20%	65%	\$0.08	88	89	BEST Simulation
Small Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Retail bldg.	New	2,981.89	15	\$70,650.44	10%	at stock turnover	\$2.91	149	139	PacifiCorp Program Data
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	10,495.91	23	\$12,992.89	7%	at stock turnover	\$0.04	62	62	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	168.31	18	\$16.00	15%	50%	\$0.00	10	10	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	New	5,090.61	10	\$5,407.00	18%	75%	\$0.14	55	56	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	1,193.94	50	\$25,000.00	15%	25%	\$1.13	20	21	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	-191.98	45	\$12,627.00	15%	50%	\$0.12	-11	-12	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	416.01	20	\$82.00	15%	50%	\$0.01	25	25	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	1,031.36	45	\$6,928.00	15%	50%	\$0.17	61	62	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	719.31	20	\$3,500.00	15%	50%	\$0.12	43	44	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	-46.62	45	\$7,710.00	15%	50%	\$2.42	-3	-3	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Retail bldg.	New	3,757.71	15	\$2,655.08	4%	at stock turnover	\$0.08	29	27	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	New	9,325.23	23	\$16,203.15	90%	at stock turnover	\$0.18	289	293	BEST Simulation
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$23,774.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	883.59	3	\$3,175.00	0%	3%	\$0.27	6	6	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	New	9,511.78	23	\$2,917.07	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,442.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$6,628.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	92.73	15	\$3,175.00	20%	65%	\$0.07	24	38	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	248.56	5	\$4,548.00	15%	25%	\$2.99	13	29	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	178.17	10	\$2,603.00	33%	60%	\$1.48	26	57	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	Existing	1,469.54	10	\$4,074.00	15%	30%	\$0.31	124	251	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	178.08	15	-\$7.05	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	227.05	15	\$55.87	100%	at stock turnover	\$0.00	572	532	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	34.47	15	\$6.66	100%	at stock turnover	\$0.01	329	321	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	8.07	15	\$0.71	100%	at stock turnover	\$0.01	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	85.30	3	\$6,100.00	10%	75%	\$0.34	30	51	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	39.24	6	\$0.84	100%	at stock turnover	\$0.00	0	1	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	31.94	15	\$15.21	100%	at stock turnover	\$0.03	165	120	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	79.62	3	\$3,175.00	0%	3%	\$0.22	1	3	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	409.48	20	\$40,000.00	10%	25%	\$0.14	20	28	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	66.06	3	\$9,600.00	10%	75%	\$0.64	14	19	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	74.13	15	\$3,175.00	20%	65%	\$0.08	11	15	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	192.22	5	\$4,548.00	15%	25%	\$3.46	6	9	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	146.27	10	\$2,603.00	44%	60%	\$1.61	7	11	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	New	1,139.16	10	\$4,074.00	15%	30%	\$0.35	55	78	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	178.08	15	-\$7.05	100%	at stock turnover	-\$0.02	2	2	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	227.05	15	\$55.87	100%	at stock turnover	\$0.00	408	383	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	34.47	15	\$6.66	100%	at stock turnover	\$0.01	235	231	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	8.07	15	\$0.71	100%	at stock turnover	\$0.01	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	39.24	6	\$0.84	100%	at stock turnover	\$0.00	0	1	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	31.94	15	\$15.21	100%	at stock turnover	\$0.03	117	67	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	61.72	3	\$3,175.00	0%	3%	\$0.27	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	3,507.75	15	\$3.27	4%	at stock turnover	\$0.00	9	9	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	357.50	10	\$3.48	4%	at stock turnover	\$0.00	3	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	606.07	18	\$14.76	4%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	643.66	10	\$7.83	4%	at stock turnover	\$0.00	4	3	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	3,507.75	15	\$4.91	5%	at stock turnover	\$0.00	11	11	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	357.50	10	\$5.22	5%	at stock turnover	\$0.00	3	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	606.07	18	\$22.14	5%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	643.66	10	\$11.74	5%	at stock turnover	\$0.00	4	4	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	2,928.01	23	\$7,298.47	7%	at stock turnover	\$0.05	12	10	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	-2,704.72	15	\$7,800.00	45%	85%	\$0.95	-69	-78	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,465.31	10	\$1,500.00	15%	35%	\$0.09	22	24	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	24,313.89	15	\$2,381.00	15%	75%	\$0.01	380	380	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	2,543.01	15	\$3,175.00	20%	65%	\$0.07	89	94	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	2,621.12	23	\$5,612.13	5%	at stock turnover	\$0.04	10	10	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	-160.90	18	\$17.00	15%	50%	\$0.02	-4	-5	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	9,939.68	45	\$12,627.00	15%	35%	\$0.09	151	163	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-339.55	20	\$82.00	15%	50%	\$0.04	-9	-10	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	2,421.73	45	\$6,928.00	15%	35%	\$0.14	36	40	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,900.02	20	\$3,500.00	15%	50%	\$0.10	50	55	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	7,712.38	45	\$7,710.00	15%	35%	\$0.08	119	127	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	2,890.68	3	\$6,100.00	10%	75%	\$0.35	139	154	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	Existing	0.00	14	\$18,829.00	3%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	2,088.28	3	\$3,175.00	0%	3%	\$0.22	5	6	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	11,322.96	20	\$40,000.00	10%	25%	\$0.14	75	75	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	2,580.53	23	\$6,650.77	9%	at stock turnover	\$0.05	14	12	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	New	2,336.45	3	\$9,600.00	10%	75%	\$0.64	67	67	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	1,286.48	10	\$1,500.00	15%	50%	\$0.10	20	20	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	24,269.79	15	\$2,381.00	15%	75%	\$0.01	189	189	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	New	2,174.15	15	\$3,175.00	20%	65%	\$0.08	43	44	BEST Simulation
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	1,863.93	23	\$4,885.75	7%	at stock turnover	\$0.04	9	9	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	409.76	18	\$16.00	15%	50%	\$0.00	6	6	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	8,521.35	45	\$12,627.00	15%	50%	\$0.12	132	133	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	208.27	20	\$82.00	15%	50%	\$0.01	3	3	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	1,970.09	45	\$6,928.00	15%	50%	\$0.17	30	30	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	1,590.39	20	\$3,500.00	15%	50%	\$0.12	25	25	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	267.88	45	\$7,710.00	15%	50%	\$2.42	4	4	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	New	0.00	14	\$18,829.00	6%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	1,687.89	3	\$3,175.00	0%	3%	\$0.27	3	3	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	553.99	15	\$3,175.00	20%	65%	\$0.07	141	230	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	396.16	15	-\$15.69	100%	at stock turnover	-\$0.02	6	8	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	505.10	15	\$124.29	100%	at stock turnover	\$0.00	1,594	1,482	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	2,639.54	5	\$18,917.00	5%	15%	\$1.14	47	103	Illinois TRM
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	Existing	4,200.97	5	\$1,157.00	15%	50%	\$0.05	289	544	Illinois TRM
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	3,070.34	12	\$4,000.00	3%	25%	\$0.12	362	778	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	Existing	443.06	16	\$729.00	1%	3%	\$0.12	5	12	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	3,295.51	10	\$3,017.00	7%	45%	\$0.10	489	997	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$3,300.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	Existing	414.95	5	\$1,100.00	10%	25%	\$0.34	8	28	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	105.80	15	\$20.44	100%	at stock turnover	\$0.01	4,204	4,102	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	24.76	15	\$2.18	100%	at stock turnover	\$0.01	0	3	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	490.94	3	\$6,100.00	10%	75%	\$0.34	170	294	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	113.78	6	\$2.42	100%	at stock turnover	\$0.00	0	4	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	92.60	15	\$44.11	100%	at stock turnover	\$0.03	1,099	799	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	426.04	3	\$3,175.00	0%	3%	\$0.22	7	18	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	2,324.02	20	\$40,000.00	10%	25%	\$0.14	108	157	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	403.79	3	\$9,600.00	10%	75%	\$0.64	81	118	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	455.51	15	\$3,175.00	20%	65%	\$0.08	64	93	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	396.16	15	-\$15.69	100%	at stock turnover	-\$0.02	4	6	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	505.10	15	\$124.29	100%	at stock turnover	\$0.00	1,138	1,067	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	2,214.34	5	\$18,917.00	5%	15%	\$1.24	23	33	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	New	3,543.85	5	\$1,157.00	15%	50%	\$0.06	130	188	Illinois TRM
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	2,586.63	12	\$4,000.00	4%	25%	\$0.13	165	239	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	New	373.70	16	\$729.00	1%	3%	\$0.14	2	3	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	2,696.10	10	\$3,017.00	22%	45%	\$0.11	89	128	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Lighting - Timelocks and Timers	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$3,300.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	New	280.69	5	\$1,100.00	10%	25%	\$0.47	4	6	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	105.80	15	\$20.44	100%	at stock turnover	\$0.01	2,996	2,952	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	24.76	15	\$2.18	100%	at stock turnover	\$0.01	0	2	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	113.78	6	\$2.42	100%	at stock turnover	\$0.00	0	4	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	92.60	15	\$44.11	100%	at stock turnover	\$0.03	777	449	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	350.39	3	\$3,175.00	0%	3%	\$0.27	4	6	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	89.26	7	\$932.00	1%	8%	\$0.37	2	2	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	Existing	1.31	7	\$20.00	1%	3%	\$2.94	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	Existing	63.84	10	\$130.00	1%	3%	\$0.30	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	Existing	278.89	15	\$1,395.00	15%	75%	\$0.60	11	11	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	160.41	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	Existing	28.78	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	300.91	3	\$3,175.00	0%	3%	\$0.22	4	4	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	103.00	7	\$932.00	1%	4%	\$0.37	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	New	1.51	7	\$1.00	1%	3%	\$0.13	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	New	0.00	13	\$0.00	26%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	New	278.89	15	\$1,395.00	15%	75%	\$0.60	7	7	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	New	160.41	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	New	28.78	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	293.93	3	\$3,175.00	0%	3%	\$0.27	3	3	BEST Simulation
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	279.32	6	\$2.10	100%	at stock turnover	\$0.00	29	31	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	Existing	28.95	4	\$265.00	10%	50%	\$2.48	24	26	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	54.99	6	\$1.36	100%	at stock turnover	\$0.01	6	6	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	48.58	6	\$3.28	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	85.92	5	\$400.00	10%	25%	\$1.07	27	29	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	113.63	6	\$0.85	100%	at stock turnover	\$0.00	22	23	Assumed same as Desktop
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	60.67	6	\$0.78	100%	at stock turnover	\$0.00	1	2	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	407.67	6	\$3.06	100%	at stock turnover	\$0.00	112	115	Assumed same as Desktop
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	279.32	6	\$2.10	100%	at stock turnover	\$0.00	19	19	ENERGY STAR Calculator
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	New	31.38	4	\$265.00	10%	50%	\$2.25	13	13	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	54.99	6	\$1.36	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	48.58	6	\$3.28	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	93.95	5	\$400.00	10%	25%	\$0.97	14	15	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	113.63	6	\$0.85	100%	at stock turnover	\$0.00	14	14	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	60.67	6	\$0.78	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	407.67	6	\$3.06	100%	at stock turnover	\$0.00	65	64	Assumed same as Desktop
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,754.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	Existing	258.79	9	\$1.48	5%	at stock turnover	\$0.00	1	1	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	Existing	450.04	8	\$1,695.00	0%	25%	\$0.66	1	1	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	Existing	793.33	9	\$70.00	0%	25%	\$0.01	6	6	PacificCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	Existing	60.07	15	\$4,128.00	0%	25%	\$7.14	1	1	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	Existing	123.52	15	\$3,584.00	0%	25%	\$3.07	2	2	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,070.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	Existing	596.94	10	\$8.82	5%	at stock turnover	\$0.00	7	6	EIA 2011
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,031.00	0%	0%	\$10.00	0	0	Developed from RTF

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Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	New	258.79	9	\$2.23	8%	at stock turnover	\$0.00	1	1	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	New	519.28	8	\$1,695.00	0%	25%	\$0.57	1	1	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	New	793.33	9	\$70.00	0%	25%	\$0.01	5	5	PacificCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	New	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	New	57.94	15	\$4,128.00	0%	25%	\$7.47	1	1	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	New	119.05	15	\$3,584.00	0%	25%	\$3.22	2	2	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,070.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	New	596.94	10	\$13.24	8%	at stock turnover	\$0.00	7	6	EIA 2011
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	-23.24	15	\$7,800.00	45%	85%	\$0.95	-2	-2	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

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Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	491.38	15	\$3,175.00	20%	65%	\$0.07	57	68	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	93.71	18	\$17.00	15%	50%	\$0.02	8	11	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	561.71	50	\$25,000.00	15%	25%	\$0.89	14	19	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	489.48	45	\$12,627.00	15%	35%	\$0.09	25	30	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-11.18	20	\$82.00	15%	50%	\$0.04	-1	-1	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	309.91	20	\$3,500.00	15%	50%	\$0.10	28	33	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	108.16	45	\$7,710.00	15%	35%	\$0.08	6	7	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	570.74	3	\$6,100.00	10%	75%	\$0.35	93	114	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	412.31	3	\$3,175.00	0%	3%	\$0.22	3	5	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	Existing	148.29	15	\$2,200.00	15%	25%	\$1.60	4	5	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	Existing	1,407.37	18	\$1,700.00	15%	35%	\$0.12	71	86	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	Existing	4,822.14	20	\$4,666.60	100%	at stock turnover	\$0.10	229	231	BEST Simulation

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Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	Existing	4,017.90	15	\$719.00	13%	25%	\$0.02	124	144	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,835.36	20	\$40,000.00	10%	25%	\$0.14	41	42	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	New	375.88	3	\$9,600.00	10%	75%	\$0.64	36	37	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	85%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	New	334.98	15	\$3,175.00	20%	65%	\$0.08	22	23	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	76.14	18	\$16.00	15%	50%	\$0.00	4	4	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	366.90	50	\$25,000.00	15%	25%	\$1.13	5	6	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	30.38	45	\$12,627.00	15%	50%	\$0.12	2	2	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	77.70	20	\$82.00	15%	50%	\$0.01	4	4	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	211.21	20	\$3,500.00	15%	50%	\$0.12	11	11	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	-4.80	45	\$7,710.00	15%	50%	\$2.42	0	0	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

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Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	271.55	3	\$3,175.00	0%	3%	\$0.27	2	2	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	New	96.87	15	\$1,300.00	15%	25%	\$1.36	1	1	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	New	932.31	18	\$1,700.00	15%	35%	\$0.18	28	28	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	New	4,521.71	20	\$4,356.53	100%	at stock turnover	\$0.10	130	132	BEST Simulation
Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	New	2,716.92	15	\$719.00	19%	25%	\$0.03	22	23	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	603.65	5	\$1,800.00	3%	75%	\$0.54	47	76	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	301.85	7	\$932.00	1%	8%	\$0.37	2	4	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	Existing	3,672.21	20	\$745.00	1%	5%	\$0.02	19	29	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	644.08	5	\$400.00	1%	10%	\$0.12	7	10	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	Existing	1,660.98	5	\$221.00	25%	65%	\$0.03	28	44	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

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Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$99.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	Existing	16.96	15	\$3.00	15%	75%	\$0.02	1	2	DEER
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	403.33	15	\$1,141.00	16%	75%	\$0.27	26	41	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	Existing	1,391.25	20	\$8,333.00	1%	30%	\$0.48	44	70	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	Existing	5,791.35	14	\$922.58	62%	at stock turnover	\$0.02	565	544	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	579.44	5	\$1,800.00	3%	75%	\$0.54	44	74	AEG study for PN&L
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,800.44	20	\$40,000.00	10%	25%	\$0.14	15	20	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	530.11	5	\$1,800.00	6%	75%	\$0.55	20	27	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	265.72	7	\$932.00	1%	4%	\$0.37	0	1	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	New	3,409.35	20	\$745.00	1%	7%	\$0.02	12	16	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	New	603.47	5	\$400.00	0%	75%	\$0.12	25	34	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	New	1,536.35	5	\$221.00	25%	65%	\$0.03	13	17	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$99.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	New	15.82	15	\$3.00	15%	75%	\$0.02	1	1	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	355.02	15	\$1,141.00	1%	75%	\$0.27	14	20	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	New	1,220.51	20	\$8,333.00	1%	30%	\$0.49	19	26	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	New	5,791.35	14	\$922.58	62%	at stock turnover	\$0.02	421	409	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	510.19	5	\$1,800.00	6%	75%	\$0.55	19	26	AEG study for PN&L
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	Existing	11,166.23	23	\$14,485.53	2%	at stock turnover	\$0.66	4	4	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	Existing	37,502.58	23	\$12,131.17	3%	at stock turnover	\$0.03	18	18	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	17,778.18	10	\$810.00	15%	75%	\$0.01	8	9	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	4,371.88	15	\$900.00	15%	75%	\$0.02	2	2	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	Existing	801.10	15	\$2,450.00	15%	75%	\$0.28	0	0	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	Existing	27,643.07	12	\$45,000.00	15%	75%	\$0.19	64	79	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	5,220.21	10	\$15,000.00	15%	35%	\$0.07	4	5	AEG research & analysis
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	42,638.36	15	\$3,570.00	15%	25%	\$0.00	2	2	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	8,785.74	15	\$31,750.00	20%	65%	\$0.07	16	17	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	Existing	16,114.28	15	\$2,171.25	0%	at stock turnover	\$0.02	0	0	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	Existing	58,129.86	23	\$126,005.86	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	1,893.03	18	\$70.00	15%	25%	\$0.00	1	1	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	Existing	34,054.94	10	\$20,160.00	18%	75%	\$0.08	28	33	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	8,946.71	50	\$250,000.00	15%	25%	\$1.69	3	4	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	20,317.53	45	\$126,270.00	15%	35%	\$0.06	17	18	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	5,387.71	20	\$820.00	15%	35%	\$0.01	4	5	BEST Simulation
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	8,164.97	45	\$69,280.00	15%	35%	\$0.12	6	7	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	5,250.59	20	\$35,000.00	15%	50%	\$0.09	7	8	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	-4,814.84	45	\$77,100.00	15%	35%	\$0.05	-4	-4	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	Existing	24,788.67	15	\$16,051.64	1%	at stock turnover	\$0.07	9	8	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	9,095.10	3	\$61,000.00	10%	75%	\$0.34	22	26	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	Existing	51,632.12	23	\$70,628.29	9%	at stock turnover	\$0.14	17	17	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$88,650.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	6,584.28	3	\$31,750.00	3%	11%	\$0.23	2	3	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	Existing	58,846.56	23	\$18,256.14	0%	at stock turnover	\$0.03	3	3	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	17,030.53	10	\$810.00	15%	75%	\$0.01	1	1	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	22,811.00	4	\$810.00	15%	75%	\$0.01	1	1	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	5,853.58	15	\$900.00	15%	75%	\$0.02	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	Existing	722.58	15	\$4,140.00	15%	75%	\$0.47	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	37,320.81	20	\$400,000.00	10%	15%	\$0.13	6	6	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	New	10,810.54	23	\$12,470.38	2%	at stock turnover	\$0.60	6	6	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	New	33,281.30	23	\$10,776.94	3%	at stock turnover	\$0.03	26	26	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	20,641.12	10	\$810.00	15%	75%	\$0.01	8	8	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	4,187.84	15	\$900.00	15%	75%	\$0.02	2	2	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$2,450.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	New	7,413.34	3	\$96,000.00	10%	75%	\$0.56	16	16	6th Plan
Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	New	22,464.86	12	\$45,000.00	15%	75%	\$0.23	45	45	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	4,315.51	10	\$15,000.00	15%	50%	\$0.08	5	5	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	34,091.04	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	New	7,293.50	15	\$31,750.00	20%	65%	\$0.07	11	11	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	New	16,114.28	15	\$2,388.38	0%	at stock turnover	\$0.02	1	1	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	New	42,746.85	23	\$95,574.51	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	2,535.55	18	\$60.00	15%	25%	\$0.00	1	1	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	New	27,205.84	10	\$20,160.00	18%	75%	\$0.10	7	7	DEER
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	7,240.80	50	\$250,000.00	15%	25%	\$2.08	2	2	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	-407.04	45	\$126,270.00	15%	50%	\$0.07	0	0	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	4,229.63	20	\$820.00	15%	25%	\$0.04	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	6,736.65	45	\$69,280.00	15%	50%	\$0.12	8	8	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	4,573.49	20	\$35,000.00	15%	50%	\$0.10	5	5	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	-283.63	45	\$77,100.00	15%	50%	\$1.25	0	0	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	New	21,571.39	15	\$15,241.64	1%	at stock turnover	\$0.08	8	8	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	New	49,975.34	23	\$60,802.89	9%	at stock turnover	\$0.13	26	27	BEST Simulation
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$88,650.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	5,364.83	3	\$31,750.00	3%	11%	\$0.25	2	2	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	New	52,883.05	23	\$16,218.17	0%	at stock turnover	\$0.03	5	5	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	12,575.29	10	\$810.00	15%	75%	\$0.01	1	1	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	16,977.92	4	\$810.00	15%	75%	\$0.01	1	1	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	4,732.96	15	\$900.00	15%	75%	\$0.02	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$4,140.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	485.37	15	\$31,750.00	20%	65%	\$0.07	11	18	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	1,341.78	5	\$1,970.00	15%	25%	\$0.24	6	14	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	547.28	10	\$6,520.00	33%	60%	\$1.17	7	16	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	Existing	7,700.08	10	\$10,210.00	15%	30%	\$0.14	56	117	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	790.40	15	-\$40.69	100%	at stock turnover	-\$0.02	1	1	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,007.75	15	\$322.37	100%	at stock turnover	\$0.00	177	164	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	70.32	15	\$12.94	100%	at stock turnover	\$0.01	154	151	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.90	15	\$1.93	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	442.18	3	\$61,000.00	10%	75%	\$0.34	13	23	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	129.99	6	\$3.60	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	105.79	15	\$65.51	100%	at stock turnover	\$0.04	209	152	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	383.96	3	\$31,750.00	3%	11%	\$0.23	1	4	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	2,193.19	20	\$400,000.00	10%	15%	\$0.13	4	6	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	356.26	3	\$96,000.00	10%	75%	\$0.56	9	13	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	397.00	15	\$31,750.00	20%	65%	\$0.07	7	10	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	1,078.40	5	\$1,970.00	15%	25%	\$0.28	4	6	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	456.84	10	\$6,520.00	44%	60%	\$1.29	3	4	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	New	6,213.67	10	\$10,210.00	15%	30%	\$0.17	35	51	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	790.40	15	-\$40.69	100%	at stock turnover	-\$0.02	1	1	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,007.75	15	\$322.37	100%	at stock turnover	\$0.00	179	168	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	70.32	15	\$12.94	100%	at stock turnover	\$0.01	154	154	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.90	15	\$1.93	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	129.99	6	\$3.60	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	105.79	15	\$65.51	100%	at stock turnover	\$0.04	212	121	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	312.14	3	\$31,750.00	3%	11%	\$0.25	1	2	BEST Simulation
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	7,624.92	15	\$4.42	2%	at stock turnover	\$0.00	1	1	Illinois TRM
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	777.11	10	\$4.70	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,317.43	18	\$19.94	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,399.15	10	\$10.58	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	7,624.92	15	\$5.31	3%	at stock turnover	\$0.00	2	1	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	777.11	10	\$5.17	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,317.43	18	\$21.94	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,399.15	10	\$12.69	3%	at stock turnover	\$0.00	1	0	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	Existing	5,205.48	23	\$104,378.41	2%	at stock turnover	\$0.66	2	2	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	24,055.15	10	\$15,000.00	15%	35%	\$0.07	24	25	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	324,985.76	15	\$3,570.00	15%	25%	\$0.00	126	126	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	40,492.76	15	\$31,750.00	20%	65%	\$0.07	91	95	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	Existing	8,085.84	23	\$89,641.22	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	3,039.14	18	\$70.00	15%	25%	\$0.00	2	2	BEST Simulation
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	164,889.00	45	\$126,270.00	15%	35%	\$0.06	168	172	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	2,785.79	20	\$820.00	15%	35%	\$0.01	3	3	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	39,747.22	45	\$69,280.00	15%	35%	\$0.12	39	41	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	31,189.40	20	\$35,000.00	15%	50%	\$0.09	54	57	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	127,990.09	45	\$77,100.00	15%	35%	\$0.05	132	133	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	47,355.68	3	\$61,000.00	10%	75%	\$0.34	151	160	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	Existing	0.00	14	\$76,440.00	3%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	34,270.53	3	\$31,750.00	3%	11%	\$0.23	13	15	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	208,813.54	20	\$400,000.00	10%	15%	\$0.13	38	38	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	New	7,243.33	23	\$104,335.11	2%	at stock turnover	\$0.60	4	4	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	New	44,237.49	3	\$96,000.00	10%	75%	\$0.56	104	104	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	22,955.69	10	\$15,000.00	15%	50%	\$0.08	29	29	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	325,062.13	15	\$3,570.00	15%	25%	\$0.00	88	88	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	New	38,796.72	15	\$31,750.00	20%	65%	\$0.07	63	63	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	New	19,555.64	23	\$67,992.14	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	-1,613.26	18	\$60.00	15%	25%	\$0.00	-1	-1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	162,190.88	45	\$126,270.00	15%	50%	\$0.07	206	206	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	-2,659.04	20	\$820.00	15%	25%	\$0.04	-1	-1	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	37,693.45	45	\$69,280.00	15%	50%	\$0.12	48	48	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	29,649.69	20	\$35,000.00	15%	50%	\$0.10	38	38	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	5,071.04	45	\$77,100.00	15%	50%	\$1.25	6	6	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	New	0.00	14	\$76,440.00	6%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	32,013.91	3	\$31,750.00	3%	11%	\$0.25	12	12	BEST Simulation
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	2,915.44	15	\$31,750.00	20%	65%	\$0.07	69	106	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,653.92	15	-\$85.15	100%	at stock turnover	-\$0.02	5	8	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	2,108.72	15	\$674.57	100%	at stock turnover	\$0.00	1,529	1,417	EIA 2011
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	8,761.15	5	\$41,300.00	5%	15%	\$0.76	14	30	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	Existing	13,852.07	5	\$8,780.00	15%	50%	\$0.12	82	157	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	15,805.17	12	\$40,000.00	3%	25%	\$0.24	171	342	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	Existing	2,378.83	16	\$5,530.00	1%	3%	\$0.19	2	5	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	17,044.52	10	\$22,890.00	7%	45%	\$0.15	232	440	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$24,110.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	Existing	1,030.70	5	\$11,000.00	10%	25%	\$1.47	2	6	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	100.40	15	\$18.48	100%	at stock turnover	\$0.01	1,190	1,170	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	24.12	15	\$2.76	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	2,532.28	3	\$61,000.00	10%	75%	\$0.34	81	133	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	222.56	6	\$6.16	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	181.14	15	\$112.17	100%	at stock turnover	\$0.04	258	188	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	2,287.46	3	\$31,750.00	3%	11%	\$0.23	9	21	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	13,362.06	20	\$400,000.00	10%	15%	\$0.13	26	37	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	2,178.60	3	\$96,000.00	10%	75%	\$0.56	55	78	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	2,461.15	15	\$31,750.00	20%	65%	\$0.07	43	62	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,653.92	15	-\$85.15	100%	at stock turnover	-\$0.02	5	8	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	2,108.72	15	\$674.57	100%	at stock turnover	\$0.00	1,540	1,444	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	7,578.58	5	\$41,300.00	5%	15%	\$0.83	9	14	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	New	11,786.17	5	\$8,780.00	15%	50%	\$0.13	52	77	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	13,573.02	12	\$40,000.00	4%	25%	\$0.26	109	154	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	New	2,042.63	16	\$5,530.00	1%	3%	\$0.21	2	2	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	14,195.63	10	\$22,890.00	22%	45%	\$0.17	59	83	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$24,110.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	New	754.20	5	\$11,000.00	10%	25%	\$2.09	1	2	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	100.40	15	\$18.48	100%	at stock turnover	\$0.01	1,196	1,189	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	24.12	15	\$2.76	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	222.56	6	\$6.16	100%	at stock turnover	\$0.01	0	1	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	181.14	15	\$112.17	100%	at stock turnover	\$0.04	262	150	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	1,964.40	3	\$31,750.00	3%	11%	\$0.25	8	11	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	272.27	7	\$1,400.00	1%	4%	\$0.47	0	0	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	Existing	3.99	7	\$30.00	1%	3%	\$1.44	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	Existing	195.26	10	\$190.00	1%	3%	\$0.15	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	Existing	0.00	13	\$0.00	50%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	Existing	1,693.89	15	\$4,110.00	15%	75%	\$0.29	14	14	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	1,604.08	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	Existing	287.82	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	1,505.31	3	\$31,750.00	3%	11%	\$0.23	6	5	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	319.47	7	\$1,400.00	1%	2%	\$0.44	0	0	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	New	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	New	1,693.89	15	\$4,110.00	15%	75%	\$0.29	11	11	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	New	1,604.08	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	New	287.82	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	1,446.60	3	\$31,750.00	3%	11%	\$0.25	5	5	BEST Simulation
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	2,807.33	6	\$21.06	100%	at stock turnover	\$0.00	26	27	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	Existing	980.46	4	\$2,650.00	10%	50%	\$0.71	66	74	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	442.16	6	\$10.96	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	488.30	6	\$33.02	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	3,015.01	5	\$4,000.00	10%	25%	\$0.30	80	86	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,142.00	6	\$6.60	77%	at stock turnover	\$0.00	15	16	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	609.72	6	\$7.80	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	4,097.31	6	\$27.36	89%	at stock turnover	\$0.00	92	94	Assumed same as Desktop
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	2,807.33	6	\$21.06	100%	at stock turnover	\$0.00	24	24	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	New	1,076.66	4	\$2,650.00	10%	50%	\$0.62	52	55	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	442.16	6	\$10.96	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	488.30	6	\$33.02	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	3,426.52	5	\$4,000.00	10%	25%	\$0.27	62	66	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,142.00	6	\$7.26	85%	at stock turnover	\$0.00	15	15	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	609.72	6	\$7.80	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	4,097.31	6	\$30.74	100%	at stock turnover	\$0.00	80	78	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	Existing	3,447.94	9	\$39.17	10%	at stock turnover	\$0.00	9	8	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	Existing	1,190.00	9	\$100.00	0%	10%	\$0.01	0	0	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$16,400.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$5,380.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	Existing	7,953.29	10	\$232.82	10%	at stock turnover	\$0.01	15	13	EIA 2011
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	New	3,447.94	9	\$47.00	12%	at stock turnover	\$0.00	10	9	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	New	1,190.00	9	\$100.00	0%	10%	\$0.01	0	0	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$16,400.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$5,380.00	0%	0%	\$10.00	0	0	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	New	7,953.29	10	\$279.39	12%	at stock turnover	\$0.01	21	19	EIA 2011
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	1,063.99	15	\$31,750.00	20%	65%	\$0.07	10	13	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	576.11	18	\$70.00	15%	25%	\$0.00	1	2	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	1,221.80	50	\$250,000.00	15%	25%	\$1.69	2	4	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	3,162.56	45	\$126,270.00	15%	35%	\$0.06	13	17	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	-44.92	20	\$820.00	15%	35%	\$0.01	0	0	BEST Simulation
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	674.75	20	\$35,000.00	15%	50%	\$0.09	5	6	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	239.50	45	\$77,100.00	15%	35%	\$0.05	1	1	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	1,255.98	3	\$61,000.00	10%	75%	\$0.34	16	22	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	908.90	3	\$31,750.00	3%	11%	\$0.23	1	3	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	Existing	322.59	15	\$22,000.00	15%	75%	\$6.91	4	5	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	Existing	3,008.20	18	\$17,000.00	15%	35%	\$0.53	12	16	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	Existing	14,104.19	20	\$12,617.57	100%	at stock turnover	\$0.09	54	54	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	Existing	9,182.86	15	\$2,920.00	13%	50%	\$0.04	75	90	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	3,603.91	20	\$400,000.00	10%	15%	\$0.13	3	3	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	New	763.52	3	\$96,000.00	10%	75%	\$0.56	9	9	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	New	657.07	15	\$31,750.00	20%	65%	\$0.07	5	6	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	464.36	18	\$60.00	15%	25%	\$0.00	1	1	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	732.12	50	\$250,000.00	15%	25%	\$2.08	1	1	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	448.10	45	\$126,270.00	15%	50%	\$0.07	3	3	BEST Simulation
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	76.04	20	\$820.00	15%	25%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	414.72	20	\$35,000.00	15%	50%	\$0.10	3	3	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	-9.62	45	\$77,100.00	15%	50%	\$1.25	0	0	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	552.54	3	\$31,750.00	3%	11%	\$0.25	1	1	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	New	193.30	15	\$13,000.00	15%	75%	\$6.52	2	2	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	New	1,813.55	18	\$17,000.00	15%	35%	\$0.85	7	7	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	New	12,153.76	20	\$11,544.34	100%	at stock turnover	\$0.10	28	29	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	New	5,725.97	15	\$2,920.00	19%	50%	\$0.06	32	33	BEST Simulation
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,233.26	5	\$18,000.00	3%	75%	\$1.62	22	24	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	253.65	7	\$1,400.00	1%	4%	\$0.47	0	0	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,344.18	5	\$4,000.00	1%	10%	\$0.36	3	3	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	Existing	6,508.27	5	\$1,320.00	25%	65%	\$0.05	14	14	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	Existing	840.06	15	\$1,140.00	15%	75%	\$0.15	7	7	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	Existing	98.82	15	\$30.00	15%	75%	\$0.04	1	1	DEER
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	1,507.07	15	\$4,420.00	16%	75%	\$0.31	12	13	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	Existing	5,534.49	20	\$12,500.00	1%	30%	\$0.22	22	23	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	Existing	541.57	13	\$25.73	77%	at stock turnover	\$0.01	5	5	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,331.17	5	\$18,000.00	3%	75%	\$1.62	23	25	AEG study for PN&L
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	7,925.38	20	\$400,000.00	10%	15%	\$0.13	4	4	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,249.53	5	\$18,000.00	6%	75%	\$1.63	15	15	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	245.86	7	\$1,400.00	1%	2%	\$0.44	0	0	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,346.67	5	\$4,000.00	0%	75%	\$0.36	17	17	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	New	6,489.91	5	\$1,320.00	25%	65%	\$0.05	10	10	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	New	841.83	15	\$1,140.00	15%	75%	\$0.15	5	5	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	New	98.98	15	\$30.00	15%	75%	\$0.04	1	1	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	1,514.88	15	\$4,420.00	1%	75%	\$0.31	11	11	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	New	5,550.06	20	\$12,500.00	1%	30%	\$0.22	16	16	BEST Simulation
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	New	541.57	13	\$25.73	77%	at stock turnover	\$0.01	6	5	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,163.70	5	\$18,000.00	6%	75%	\$1.63	15	15	AEG study for PN&L
Warehouse - Refrigerated	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,320.95	23	\$10,794.44	2%	at stock turnover	\$0.68	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	27,946.48	23	\$9,040.01	13%	at stock turnover	\$0.03	18	18	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,225.51	10	\$810.00	15%	75%	\$0.01	8	9	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,245.94	15	\$900.00	15%	75%	\$0.03	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	635.81	15	\$2,450.00	15%	75%	\$0.37	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Warehouse - Refrigerated	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,785.36	10	\$15,000.00	15%	35%	\$0.09	2	2	AEG research & analysis
Warehouse - Refrigerated	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	31,719.61	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse - Refrigerated	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,370.63	15	\$31,750.00	20%	65%	\$0.08	8	8	BEST Simulation
Warehouse - Refrigerated	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,008.18	15	\$1,121.62	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	43,317.69	23	\$93,898.09	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,392.55	18	\$70.00	15%	50%	\$0.00	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	24,984.28	10	\$20,160.00	18%	75%	\$0.11	16	19	DEER
Warehouse - Refrigerated	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,844.35	50	\$250,000.00	15%	25%	\$1.73	2	2	6th Plan
Warehouse - Refrigerated	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	14,731.95	45	\$126,270.00	15%	35%	\$0.07	8	9	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,922.78	20	\$820.00	15%	50%	\$0.01	4	4	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,844.61	45	\$69,280.00	15%	35%	\$0.15	3	3	BPA

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,758.33	20	\$35,000.00	15%	50%	\$0.11	3	4	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-3,491.20	45	\$77,100.00	15%	35%	\$0.07	-2	-2	BEST Simulation
Warehouse - Refrigerated	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	18,472.22	15	\$11,961.49	1%	at stock turnover	\$0.07	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,959.14	3	\$61,000.00	10%	75%	\$0.00	11	0	6th Plan
Warehouse - Refrigerated	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	38,475.65	23	\$52,631.37	17%	at stock turnover	\$0.14	8	8	BEST Simulation
Warehouse - Refrigerated	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$88,650.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,040.09	3	\$31,750.00	3%	11%	\$0.00	1	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	43,851.76	23	\$13,604.26	1%	at stock turnover	\$0.03	3	3	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,669.54	10	\$810.00	15%	75%	\$0.01	1	17	DEER
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16,970.00	4	\$810.00	15%	75%	\$0.01	1	59	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,346.43	15	\$900.00	15%	75%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	572.57	15	\$4,140.00	15%	75%	\$0.63	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,055.89	23	\$9,292.78	2%	at stock turnover	\$0.62	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	New	24,800.84	23	\$8,030.85	13%	at stock turnover	\$0.03	25	26	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$810.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$900.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$2,450.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$15,000.00	15%	50%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$3,570.00	15%	25%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	New	12,008.18	15	\$1,233.78	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data
Warehouse - Refrigerated	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	New	31,854.45	23	\$71,221.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	18	\$60.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$20,160.00	18%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	50	\$250,000.00	15%	25%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	45	\$126,270.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	45	\$69,280.00	15%	50%	\$10.00	0	0	BPA
Warehouse - Refrigerated	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$35,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	45	\$77,100.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	16,074.75	15	\$11,357.89	1%	at stock turnover	\$0.08	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	37,241.04	23	\$45,309.60	17%	at stock turnover	\$0.13	12	12	BEST Simulation
Warehouse - Refrigerated	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$88,650.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$31,750.00	3%	11%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	New	39,407.82	23	\$12,085.59	1%	at stock turnover	\$0.03	5	5	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$810.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$810.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$900.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$4,140.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	486.58	15	\$31,750.00	20%	65%	\$0.08	3	6	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,324.31	5	\$6,340.00	15%	25%	\$0.79	2	4	Illinois TRM
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	560.44	10	\$6,670.00	33%	60%	\$1.19	2	5	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,718.52	10	\$10,440.00	15%	30%	\$0.15	18	37	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	932.07	15	-\$47.99	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,188.38	15	\$380.16	100%	at stock turnover	\$0.00	66	61	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	67.19	15	\$12.37	100%	at stock turnover	\$0.01	47	46	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.14	15	\$1.84	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	446.84	3	\$61,000.00	10%	75%	\$0.41	4	1	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	119.44	6	\$3.31	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	97.21	15	\$60.20	100%	at stock turnover	\$0.04	61	44	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	388.02	3	\$31,750.00	3%	11%	\$0.25	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$6,340.00	15%	25%	\$10.00	0	0	Illinois TRM
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$6,670.00	44%	60%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$10,440.00	15%	30%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	932.07	15	-\$47.99	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,188.38	15	\$380.16	100%	at stock turnover	\$0.00	67	63	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	67.19	15	\$12.37	100%	at stock turnover	\$0.01	47	46	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.14	15	\$1.84	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	119.44	6	\$3.31	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	97.21	15	\$60.20	100%	at stock turnover	\$0.04	62	35	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$31,750.00	3%	11%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	11,942.73	15	\$124.85	41%	at stock turnover	-\$0.01	10	10	Illinois TRM
Warehouse - Refrigerated	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,217.16	10	\$132.61	41%	at stock turnover	\$0.02	4	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse - Refrigerated	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,063.46	18	\$562.75	41%	at stock turnover	\$0.03	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse - Refrigerated	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,191.46	10	\$298.47	41%	at stock turnover	\$0.02	4	4	Developed from RTF "ComCookingConvectionOven" v2.0

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,942.73	15	\$149.81	49%	at stock turnover	-\$0.01	14	13	Illinois TRM
Warehouse - Refrigerated	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,217.16	10	\$145.87	45%	at stock turnover	\$0.02	4	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse - Refrigerated	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,063.46	18	\$619.03	45%	at stock turnover	\$0.03	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse - Refrigerated	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,191.46	10	\$358.17	49%	at stock turnover	\$0.02	5	4	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse - Refrigerated	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,036.78	23	\$80,944.00	2%	at stock turnover	\$0.68	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	18,647.97	10	\$15,000.00	15%	35%	\$0.09	4	5	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	251,873.87	15	\$3,570.00	15%	25%	\$0.00	23	23	Developed from RTF
Warehouse - Refrigerated	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	31,390.64	15	\$31,750.00	20%	65%	\$0.08	17	17	BEST Simulation
Warehouse - Refrigerated	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,270.45	23	\$69,515.52	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,358.26	18	\$70.00	15%	50%	\$0.00	1	1	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	127,824.24	45	\$126,270.00	15%	35%	\$0.07	31	31	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,160.06	20	\$820.00	15%	50%	\$0.01	1	1	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	30,812.79	45	\$69,280.00	15%	35%	\$0.15	7	8	BPA
Warehouse - Refrigerated	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	24,178.58	20	\$35,000.00	15%	50%	\$0.11	10	10	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	99,219.47	45	\$77,100.00	15%	35%	\$0.07	24	24	BEST Simulation
Warehouse - Refrigerated	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	36,711.04	3	\$61,000.00	10%	75%	\$0.41	28	609	6th Plan
Warehouse - Refrigerated	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	14	\$76,440.00	3%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	26,567.18	3	\$31,750.00	3%	11%	\$0.25	2	58	BEST Simulation
Warehouse - Refrigerated	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,617.10	23	\$80,910.42	2%	at stock turnover	\$0.62	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$15,000.00	15%	50%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$3,570.00	15%	25%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	New	15,165.12	23	\$52,726.96	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	18	\$60.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	45	\$126,270.00	15%	50%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	45	\$69,280.00	15%	50%	\$10.00	0	0	BPA
Warehouse - Refrigerated	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$35,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	45	\$77,100.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	14	\$76,440.00	6%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$31,750.00	3%	11%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,565.88	15	\$31,750.00	20%	65%	\$0.08	18	29	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,736.89	15	-\$89.43	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	2,214.50	15	\$708.41	100%	at stock turnover	\$0.00	509	471	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,222.41	5	\$34,360.00	5%	15%	\$0.66	4	9	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,409.79	5	\$3,280.00	15%	50%	\$0.05	25	48	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15,263.21	12	\$40,000.00	3%	25%	\$0.25	53	105	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,310.80	16	\$2,070.00	1%	3%	\$0.07	1	2	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16,947.93	10	\$8,550.00	25%	75%	\$0.00	57	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$9,490.00	7%	15%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	907.89	5	\$11,000.00	10%	25%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	95.92	15	\$17.65	100%	at stock turnover	\$0.01	360	354	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	23.05	15	\$2.63	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,438.88	3	\$61,000.00	10%	75%	\$0.41	25	2	6th Plan
Warehouse - Refrigerated	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	186.21	6	\$5.16	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	151.56	15	\$93.85	100%	at stock turnover	\$0.04	68	50	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,117.84	3	\$31,750.00	3%	11%	\$0.25	3	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,736.89	15	-\$89.43	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	2,214.50	15	\$708.41	100%	at stock turnover	\$0.00	512	480	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$34,360.00	5%	15%	\$10.00	0	0	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$3,280.00	15%	50%	\$10.00	0	0	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	12	\$40,000.00	4%	25%	\$10.00	0	0	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	16	\$2,070.00	1%	3%	\$10.00	0	0	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$8,550.00	25%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$9,490.00	7%	15%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$11,000.00	10%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	95.92	15	\$17.65	100%	at stock turnover	\$0.01	362	360	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	23.05	15	\$2.63	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	186.21	6	\$5.16	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	151.56	15	\$93.85	100%	at stock turnover	\$0.04	69	40	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$31,750.00	3%	11%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,038.29	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15.16	7	\$30.00	1%	3%	\$0.38	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	742.51	10	\$190.00	1%	3%	\$0.04	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculatorBulkPurchasingWaterCooler.xls
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	13	\$0.00	79%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,184.93	15	\$4,110.00	15%	75%	\$0.00	25	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,604.08	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	287.82	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse - Refrigerated	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,065.97	3	\$31,750.00	3%	11%	\$0.25	7	10	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	7	\$1,400.00	1%	2%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	13	\$0.00	95%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$4,110.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,604.08	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	New	287.82	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse - Refrigerated	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$31,750.00	3%	11%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,988.93	6	\$14.92	100%	at stock turnover	\$0.00	6	6	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	694.63	4	\$2,650.00	10%	50%	\$1.00	15	17	Developed from RTF
Warehouse - Refrigerated	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	313.26	6	\$7.76	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	345.95	6	\$23.39	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,136.04	5	\$4,000.00	10%	25%	\$0.43	18	9	5th Plan
Warehouse - Refrigerated	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	809.08	6	\$4.67	77%	at stock turnover	\$0.00	3	4	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	431.97	6	\$5.52	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,902.84	6	\$19.39	89%	at stock turnover	\$0.00	21	21	Assumed same as Desktop
Warehouse - Refrigerated	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,988.93	6	\$14.92	100%	at stock turnover	\$0.00	5	5	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$2,650.00	10%	50%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	313.26	6	\$7.76	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	345.95	6	\$23.39	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$4,000.00	10%	25%	\$10.00	0	0	5th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	809.08	6	\$5.14	85%	at stock turnover	\$0.00	3	3	Assumed same as Desktop
Warehouse - Refrigerated	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	431.97	6	\$5.52	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,902.84	6	\$21.78	100%	at stock turnover	\$0.00	18	18	Assumed same as Desktop
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,938.17	9	\$1,437.46	92%	at stock turnover	\$0.02	108	98	EIA 2011
Warehouse - Refrigerated	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	290,775.91	8	\$2,540.00	13%	70%	\$0.00	1,293	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	22,491.00	9	\$100.00	5%	77%	\$0.00	126	100	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$2,310.00	12%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	16	\$160.00	2%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$16,400.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$5,380.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse - Refrigerated	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	32,150.93	10	\$8,545.18	92%	at stock turnover	\$0.06	177	156	EIA 2011
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,938.17	9	\$1,567.57	100%	at stock turnover	\$0.02	108	99	EIA 2011
Warehouse - Refrigerated	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$2,540.00	13%	70%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	9	\$100.00	5%	77%	\$10.00	0	0	PacifiCorp Program Data
Warehouse - Refrigerated	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$2,310.00	12%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	16	\$160.00	2%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$16,400.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$5,380.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse - Refrigerated	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	New	32,150.93	10	\$9,318.63	100%	at stock turnover	\$0.07	218	199	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,882.74	15	\$31,750.00	20%	65%	\$0.08	8	11	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,566.80	18	\$70.00	15%	50%	\$0.00	4	5	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,310.42	50	\$250,000.00	15%	25%	\$1.73	2	3	6th Plan
Warehouse - Refrigerated	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,568.48	45	\$126,270.00	15%	35%	\$0.07	11	15	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-114.26	20	\$820.00	15%	50%	\$0.01	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,828.17	20	\$35,000.00	15%	50%	\$0.11	4	5	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	648.89	45	\$77,100.00	15%	35%	\$0.07	1	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,362.97	3	\$61,000.00	10%	75%	\$0.41	14	56	6th Plan
Warehouse - Refrigerated	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,433.63	3	\$31,750.00	3%	11%	\$0.25	1	4	BEST Simulation
Warehouse - Refrigerated	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	874.04	15	\$22,000.00	15%	75%	\$0.00	3	0	6th Plan
Warehouse - Refrigerated	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,303.35	18	\$17,000.00	15%	35%	\$0.20	11	42	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	38,360.09	20	\$34,316.84	100%	at stock turnover	\$0.09	46	47	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	24,871.11	15	\$2,920.00	13%	50%	\$0.01	64	42	BEST Simulation
Warehouse - Refrigerated	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$96,000.00	10%	75%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$15,000.00	15%	50%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$31,750.00	20%	65%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	18	\$60.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	50	\$250,000.00	15%	25%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	45	\$126,270.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$35,000.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	45	\$77,100.00	15%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$31,750.00	3%	11%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$13,000.00	15%	75%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	18	\$17,000.00	15%	35%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	New	33,055.39	20	\$31,397.91	100%	at stock turnover	\$0.10	24	25	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$2,920.00	19%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,577.25	5	\$18,000.00	3%	75%	\$1.06	11	12	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	400.03	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse - Refrigerated	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,596.55	5	\$4,000.00	1%	10%	\$0.00	1	0	AEG study for LA Dept of Water & Power
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	9,987.13	5	\$1,320.00	25%	65%	\$0.03	7	2	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,289.10	15	\$1,140.00	15%	75%	\$0.00	3	0	Hawaii TRM
Warehouse - Refrigerated	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	151.63	15	\$30.00	15%	75%	\$0.02	0	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,312.21	15	\$4,420.00	16%	75%	\$0.20	6	6	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,492.83	20	\$12,500.00	1%	30%	\$0.14	11	23	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	831.06	13	\$39.49	77%	at stock turnover	\$0.01	3	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,427.00	5	\$18,000.00	3%	75%	\$1.06	11	0	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$400,000.00	10%	15%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$18,000.00	6%	75%	\$10.00	0	0	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	7	\$1,400.00	1%	2%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse - Refrigerated	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$4,000.00	0%	75%	\$10.00	0	0	AEG study for LA Dept of Water & Power
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$1,320.00	25%	65%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$1,140.00	15%	75%	\$10.00	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$30.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$4,420.00	1%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$12,500.00	1%	30%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	New	831.06	13	\$39.49	77%	at stock turnover	\$0.01	3	3	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$18,000.00	6%	75%	\$10.00	0	0	AEG study for PN&L

Utah Commercial Measure Assumptions

Table H-8 Table of Utah Commercial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	41,411.79	23	\$413,235.00	5%	at stock turnover	\$0.08	478	411	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft College bldg.	Existing	37,724.80	23	\$59,135.08	49%	at stock turnover	\$0.12	4,658	4,701	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	27,536.92	10	\$813.00	15%	75%	\$0.00	5,563	6,261	BEST Simulation
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	6,510.86	15	\$1,107.00	15%	75%	\$0.01	1,288	1,509	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	Existing	1,194.88	15	\$3,819.00	15%	75%	\$0.19	215	293	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	15,815.43	15	\$23,400.00	45%	85%	\$0.18	3,280	3,914	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	Existing	23,996.19	12	\$13,500.00	15%	25%	\$0.04	1,502	1,826	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	4,245.45	10	\$4,500.00	15%	35%	\$0.03	533	600	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	Existing	7,144.28	15	\$9,525.00	20%	65%	\$0.03	2,038	2,273	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	Existing	10,113.55	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	36,491.52	23	\$339,780.25	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	3,756.55	18	\$102.00	15%	50%	\$0.00	857	972	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	Existing	28,093.92	10	\$31,365.00	18%	75%	\$0.07	4,454	5,504	DEER
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	7,388.76	50	\$75,000.00	15%	25%	\$0.48	429	588	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	297.08	45	\$37,881.00	15%	35%	\$0.14	36	42	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	10,353.26	20	\$246.00	15%	35%	\$0.00	1,347	1,464	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	6,958.76	45	\$20,784.00	15%	35%	\$0.08	865	984	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	4,468.06	20	\$10,500.00	15%	50%	\$0.05	976	1,106	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	-2,494.60	45	\$23,130.00	15%	35%	\$0.07	-310	-353	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	Existing	15,894.01	15	\$70,490.92	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	Existing	7,667.43	3	\$18,300.00	10%	75%	\$0.05	3,005	3,524	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	Existing	13,611.36	23	\$81,536.22	29%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	Existing	0.00	15	\$137,916.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	5,583.39	3	\$9,525.00	3%	29%	\$0.04	876	1,267	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	Existing	71,243.60	23	\$89,473.95	12%	at stock turnover	\$0.10	273	273	BEST Simulation
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	18,874.77	10	\$813.00	15%	75%	\$0.00	894	1,111	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	Existing	27,998.21	4	\$813.00	15%	75%	\$0.00	1,308	1,667	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	8,796.22	15	\$1,107.00	15%	75%	\$0.01	402	533	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	Existing	1,270.59	15	\$5,091.00	15%	75%	\$0.22	53	81	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	24,074.64	20	\$120,000.00	10%	30%	\$0.07	849	863	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	37,961.99	23	\$410,385.13	6%	at stock turnover	\$0.08	215	181	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft College bldg.	New	23,991.32	23	\$53,197.17	55%	at stock turnover	\$0.17	1,440	1,458	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	16,286.57	10	\$813.00	15%	75%	\$0.00	884	904	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	5,709.60	15	\$1,107.00	15%	75%	\$0.01	309	316	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	New	657.34	15	\$3,819.00	15%	75%	\$0.32	35	36	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	New	4,537.59	3	\$28,800.00	10%	75%	\$0.10	516	524	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	3,282.12	15	\$23,400.00	45%	85%	\$1.20	200	204	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	New	13,964.27	12	\$13,500.00	15%	25%	\$0.06	246	250	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	2,614.08	10	\$4,500.00	15%	50%	\$0.03	161	164	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	New	4,417.80	15	\$9,525.00	20%	65%	\$0.04	351	357	BEST Simulation
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	New	10,113.55	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	33,504.98	23	\$337,436.97	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	2,086.78	18	\$102.00	15%	35%	\$0.01	74	75	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	New	16,180.44	10	\$31,365.00	18%	75%	\$0.12	270	273	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	4,421.31	50	\$75,000.00	15%	25%	\$0.78	77	78	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	-1,744.67	45	\$37,881.00	15%	50%	\$0.29	-107	-108	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	6,014.60	20	\$246.00	15%	50%	\$0.00	373	380	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	4,151.55	45	\$20,784.00	15%	50%	\$0.10	256	260	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	2,770.40	20	\$10,500.00	15%	50%	\$0.06	171	174	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	-39.95	45	\$23,130.00	15%	50%	\$0.52	-2	-2	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	New	14,221.95	15	\$70,384.47	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	New	12,484.13	23	\$80,973.90	33%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	New	0.00	15	\$137,916.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	New	3,519.84	3	\$9,525.00	3%	29%	\$0.05	210	214	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	New	51,174.12	23	\$80,489.63	14%	at stock turnover	\$0.12	94	94	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	10,233.68	10	\$813.00	15%	75%	\$0.01	141	143	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	New	15,302.00	4	\$813.00	15%	75%	\$0.00	210	213	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	7,092.71	15	\$1,107.00	15%	75%	\$0.01	97	98	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	New	672.50	15	\$5,091.00	15%	75%	\$0.42	9	9	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	139.13	15	\$9,525.00	20%	65%	\$0.03	92	140	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	368.37	5	\$11,814.00	15%	25%	\$1.70	50	102	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	286.73	10	\$3,327.00	33%	60%	\$0.63	109	217	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	Existing	2,158.97	10	\$5,208.00	15%	30%	\$0.14	462	877	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	134.21	15	-\$9.01	100%	at stock turnover	\$0.01	6	20	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	171.12	15	\$71.40	100%	at stock turnover	\$0.02	1,502	1,520	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	39.92	15	\$17.53	100%	at stock turnover	\$0.04	3,037	2,928	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	9.10	15	\$1.36	100%	at stock turnover	\$0.00	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	136.67	3	\$18,300.00	10%	75%	\$0.05	129	199	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	32.69	6	\$1.18	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	26.61	15	\$21.49	100%	at stock turnover	\$0.04	32	22	EIA 2011
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	119.42	3	\$9,525.00	3%	29%	\$0.04	45	91	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	672.09	20	\$120,000.00	10%	30%	\$0.07	42	63	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	New	106.64	3	\$28,800.00	10%	75%	\$0.10	21	32	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	121.67	15	\$9,525.00	20%	65%	\$0.04	17	26	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	New	309.76	5	\$11,814.00	15%	25%	\$1.75	9	14	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	273.41	10	\$3,327.00	44%	60%	\$0.57	14	20	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	New	1,838.95	10	\$5,208.00	15%	30%	\$0.14	85	128	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	134.21	15	-\$9.01	100%	at stock turnover	\$0.01	2	6	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	171.12	15	\$71.40	100%	at stock turnover	\$0.01	434	440	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	39.92	15	\$17.53	100%	at stock turnover	\$0.04	906	877	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	9.10	15	\$1.36	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	32.69	6	\$1.18	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	26.61	15	\$21.49	100%	at stock turnover	\$0.04	9	5	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	100.42	3	\$9,525.00	3%	29%	\$0.05	11	16	BEST Simulation
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	Existing	14,572.58	15	\$35.19	21%	at stock turnover	\$0.00	245	239	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,485.19	10	\$37.38	21%	at stock turnover	\$0.00	87	75	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	Existing	2,517.85	18	\$158.63	21%	at stock turnover	\$0.00	33	32	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	Existing	2,674.03	10	\$84.13	21%	at stock turnover	\$0.00	105	91	Developed from RTF "ComCookingConvectionOven" v2.0
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	New	14,572.58	15	\$49.27	29%	at stock turnover	\$0.00	114	111	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	New	1,485.19	10	\$52.33	29%	at stock turnover	\$0.00	34	30	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	New	2,517.85	18	\$222.08	29%	at stock turnover	\$0.01	13	13	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	New	2,674.03	10	\$117.79	29%	at stock turnover	\$0.00	41	37	Developed from RTF "ComCookingConvectionOven" v2.0
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	15,096.99	23	\$52,400.54	5%	at stock turnover	\$0.08	156	135	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	-8,856.20	15	\$23,400.00	45%	85%	\$0.18	-332	-359	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	7,397.75	10	\$4,500.00	15%	35%	\$0.03	166	171	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	110,177.58	15	\$3,573.00	15%	25%	\$0.00	857	856	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Energy Management System	per 30,000 sqft College bldg.	Existing	12,453.46	15	\$9,525.00	20%	65%	\$0.03	635	648	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	22,354.39	23	\$49,649.52	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	-1,802.56	18	\$102.00	15%	50%	\$0.00	-72	-74	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	19,288.96	45	\$37,881.00	15%	35%	\$0.14	424	446	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	-2,535.07	20	\$246.00	15%	35%	\$0.00	-58	-59	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	12,099.65	45	\$20,784.00	15%	35%	\$0.08	267	280	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	9,591.64	20	\$10,500.00	15%	50%	\$0.05	376	388	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	28,074.97	45	\$23,130.00	15%	35%	\$0.07	625	650	BEST Simulation
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	Existing	14,224.68	3	\$18,300.00	10%	75%	\$0.05	1,008	1,070	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	Existing	0.00	14	\$100,242.00	3%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	10,359.30	3	\$9,525.00	3%	29%	\$0.04	294	332	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	64,395.32	20	\$120,000.00	10%	30%	\$0.07	320	321	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	14,721.88	23	\$53,657.55	6%	at stock turnover	\$0.08	69	58	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	New	12,914.35	3	\$28,800.00	10%	75%	\$0.10	208	209	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	-2,562.23	15	\$23,400.00	45%	85%	\$1.20	-22	-22	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	7,003.35	10	\$4,500.00	15%	50%	\$0.03	61	61	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	109,899.08	15	\$3,573.00	15%	25%	\$0.00	177	177	Developed from RTF
College	Heating	Energy Management System	per 30,000 sqft College bldg.	New	11,836.54	15	\$9,525.00	20%	65%	\$0.04	133	133	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	20,991.72	23	\$49,307.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	-1,689.36	18	\$102.00	15%	35%	\$0.01	-8	-8	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	11,318.33	45	\$37,881.00	15%	50%	\$0.29	98	99	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	-2,187.52	20	\$246.00	15%	50%	\$0.00	-19	-19	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	11,102.54	45	\$20,784.00	15%	50%	\$0.10	96	97	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	9,045.43	20	\$10,500.00	15%	50%	\$0.06	79	79	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	3,067.35	45	\$23,130.00	15%	50%	\$0.52	27	27	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	New	0.00	14	\$100,242.00	6%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	New	9,511.37	3	\$9,525.00	3%	29%	\$0.05	80	80	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	823.61	15	\$9,525.00	20%	65%	\$0.03	505	829	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	457.47	15	-\$30.72	100%	at stock turnover	\$0.01	23	83	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	583.27	15	\$243.37	100%	at stock turnover	\$0.02	6,238	6,310	EIA 2011
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	5,210.91	5	\$12,789.00	5%	15%	\$0.12	228	494	Illinois TRM
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	Existing	8,354.66	5	\$735.00	15%	50%	\$0.01	1,407	2,634	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	4,853.40	12	\$12,000.00	3%	25%	\$0.13	1,419	2,967	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	Existing	734.98	16	\$462.00	1%	3%	\$0.03	20	47	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	5,307.37	10	\$1,917.00	7%	45%	\$0.02	1,973	3,858	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 30,000 sqft College bldg.	Existing	0.00	8	\$2,148.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	Existing	408.82	5	\$3,300.00	10%	25%	\$0.32	19	67	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	162.22	15	\$71.25	100%	at stock turnover	\$0.04	20,463	19,728	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	36.99	15	\$5.51	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	777.99	3	\$18,300.00	10%	75%	\$0.05	668	1,131	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	168.57	6	\$6.09	100%	at stock turnover	\$0.01	0	11	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	137.19	15	\$110.81	100%	at stock turnover	\$0.04	3,041	2,127	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	706.76	3	\$9,525.00	3%	29%	\$0.04	248	609	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	4,017.31	20	\$120,000.00	10%	30%	\$0.07	246	372	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	New	657.57	3	\$28,800.00	10%	75%	\$0.10	130	196	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	727.18	15	\$9,525.00	20%	65%	\$0.04	100	152	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	457.47	15	-\$30.72	100%	at stock turnover	\$0.01	7	26	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	583.27	15	\$243.37	100%	at stock turnover	\$0.01	1,803	1,825	EIA 2011
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	New	4,457.93	5	\$12,789.00	5%	15%	\$0.13	46	68	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	New	7,112.47	5	\$735.00	15%	50%	\$0.01	260	387	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	4,123.29	12	\$12,000.00	4%	25%	\$0.14	258	390	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	New	654.82	16	\$462.00	1%	3%	\$0.04	4	6	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	New	4,550.35	10	\$1,917.00	22%	45%	\$0.02	147	223	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timelocks and Timers	per 30,000 sqft College bldg.	New	0.00	8	\$2,148.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	New	273.96	5	\$3,300.00	10%	25%	\$0.44	4	6	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	162.22	15	\$71.25	100%	at stock turnover	\$0.04	6,103	5,913	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	36.99	15	\$5.51	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	168.57	6	\$6.09	100%	at stock turnover	\$0.01	0	4	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	137.19	15	\$110.81	100%	at stock turnover	\$0.04	864	500	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	600.42	3	\$9,525.00	3%	29%	\$0.05	62	94	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	416.54	7	\$1,398.00	1%	4%	\$0.05	11	11	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	Existing	6.04	7	\$30.00	1%	3%	\$0.39	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	Existing	297.90	10	\$195.00	1%	3%	\$0.05	5	5	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	Existing	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	Existing	606.05	15	\$96.00	15%	75%	\$0.01	241	241	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	Existing	1,057.52	10	\$244.98	36%	at stock turnover	\$0.02	217	199	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	Existing	379.50	10	\$465.44	90%	at stock turnover	\$0.10	198	182	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	Existing	14.77	5	\$60.00	15%	75%	\$0.27	4	6	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	405.43	3	\$9,525.00	3%	29%	\$0.04	273	258	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	416.59	7	\$1,398.00	1%	2%	\$0.05	1	1	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	New	6.10	7	\$3.00	1%	3%	\$0.04	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	New	606.05	15	\$96.00	15%	75%	\$0.01	56	56	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	New	1,057.52	10	\$293.97	43%	at stock turnover	\$0.02	73	69	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	New	379.50	10	\$515.44	100%	at stock turnover	\$0.11	62	58	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	New	14.22	5	\$60.00	15%	75%	\$0.27	1	1	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	New	378.99	3	\$9,525.00	3%	29%	\$0.05	75	73	BEST Simulation
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	4,617.56	6	\$34.65	100%	at stock turnover	\$0.00	1,175	1,240	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	Existing	644.82	4	\$795.00	10%	50%	\$0.09	1,214	1,417	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	Existing	272.73	6	\$6.76	100%	at stock turnover	\$0.00	69	73	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	Existing	803.17	6	\$54.30	100%	at stock turnover	\$0.01	82	86	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	Existing	1,969.50	5	\$1,200.00	10%	25%	\$0.05	1,453	1,627	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	Existing	234.80	6	\$1.76	100%	at stock turnover	\$0.00	109	115	Assumed same as Desktop
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,253.60	6	\$16.03	100%	at stock turnover	\$0.00	73	76	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	Existing	673.93	6	\$5.06	100%	at stock turnover	\$0.00	448	462	Assumed same as Desktop
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	New	4,617.56	6	\$34.65	100%	at stock turnover	\$0.00	325	323	ENERGY STAR Calculator
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	New	613.44	4	\$795.00	10%	50%	\$0.09	247	264	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	New	272.73	6	\$6.76	100%	at stock turnover	\$0.00	19	19	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	New	803.17	6	\$54.30	100%	at stock turnover	\$0.01	23	23	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	New	1,910.79	5	\$1,200.00	10%	25%	\$0.05	290	309	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	New	234.80	6	\$1.76	100%	at stock turnover	\$0.00	29	29	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	New	1,253.60	6	\$16.03	100%	at stock turnover	\$0.00	17	17	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	New	673.93	6	\$5.06	100%	at stock turnover	\$0.00	109	107	Assumed same as Desktop
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	Existing	562.78	9	\$16.84	27%	at stock turnover	\$0.00	37	34	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	Existing	1,529.60	8	\$2,544.00	0%	25%	\$0.13	76	76	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	Existing	1,230.00	9	\$96.00	0%	25%	\$0.01	31	31	PacifiCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	Existing	189.77	15	\$315.00	0%	25%	\$0.12	43	47	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	Existing	372.63	15	\$5,562.00	0%	25%	\$1.08	83	93	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	Existing	330.47	4	\$4,524.00	0%	25%	\$1.04	5	5	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	Existing	1,298.16	10	\$100.09	27%	at stock turnover	\$0.01	214	186	EIA 2011
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	New	562.78	9	\$23.57	37%	at stock turnover	\$0.00	21	19	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	New	1,530.55	8	\$2,544.00	0%	25%	\$0.13	22	22	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	New	1,230.00	9	\$96.00	0%	25%	\$0.01	9	9	PacificCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	New	186.31	15	\$315.00	0%	25%	\$0.13	12	13	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	New	366.29	15	\$5,562.00	0%	25%	\$1.10	24	25	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	New	330.90	4	\$4,524.00	0%	25%	\$1.04	1	1	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	New	1,298.16	10	\$140.12	37%	at stock turnover	\$0.01	85	78	EIA 2011
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	Existing	1,713.14	15	\$9,525.00	20%	65%	\$0.03	428	575	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	937.22	18	\$102.00	15%	50%	\$0.00	196	276	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	1,955.13	50	\$75,000.00	15%	25%	\$0.48	103	173	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	1,086.52	20	\$10,500.00	15%	50%	\$0.05	209	284	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	164.46	45	\$23,130.00	15%	35%	\$0.07	18	25	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	Existing	1,985.86	3	\$18,300.00	10%	75%	\$0.05	696	963	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	1,446.02	3	\$9,525.00	3%	29%	\$0.04	203	373	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	Existing	516.22	15	\$6,600.00	15%	75%	\$0.87	164	231	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	Existing	4,933.17	18	\$5,100.00	15%	35%	\$0.07	539	736	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	Existing	24,969.35	20	\$43,893.69	100%	at stock turnover	\$0.14	735	744	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	Existing	14,582.31	15	\$3,828.00	13%	50%	\$0.02	3,188	3,987	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	6,209.97	20	\$120,000.00	10%	30%	\$0.07	190	191	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	New	1,250.59	3	\$28,800.00	10%	75%	\$0.10	124	124	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	New	1,132.26	15	\$9,525.00	20%	65%	\$0.04	78	78	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	628.24	18	\$102.00	15%	35%	\$0.01	19	19	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	1,220.66	50	\$75,000.00	15%	25%	\$0.78	19	19	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	0.00	45	\$37,881.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	714.62	20	\$10,500.00	15%	50%	\$0.06	38	38	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	8.09	45	\$23,130.00	15%	50%	\$0.52	0	0	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

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College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	New	910.74	3	\$9,525.00	3%	29%	\$0.05	47	47	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	New	322.29	15	\$3,900.00	15%	75%	\$0.78	29	30	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	New	3,126.76	18	\$5,100.00	15%	35%	\$0.11	95	96	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	New	25,278.70	20	\$43,885.49	100%	at stock turnover	\$0.14	77	78	BEST Simulation
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	New	9,796.59	15	\$3,828.00	19%	50%	\$0.03	459	462	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	5,216.77	5	\$5,400.00	3%	75%	\$0.07	712	765	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	1,432.61	7	\$1,398.00	1%	4%	\$0.05	8	8	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	Existing	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	Existing	5,602.23	5	\$1,200.00	1%	10%	\$0.02	100	103	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	Existing	14,467.42	5	\$993.00	25%	65%	\$0.01	422	429	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	Existing	2,005.95	15	\$66.00	15%	25%	\$0.00	39	39	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	Existing	159.17	15	\$9.00	15%	75%	\$0.00	19	19	DEER
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	Existing	3,504.18	15	\$2,421.00	16%	75%	\$0.05	400	413	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	Existing	11,109.12	20	\$37,500.00	1%	30%	\$0.22	600	662	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	Existing	1,204.84	13	\$112.67	35%	at stock turnover	\$0.01	161	153	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	5,447.43	5	\$5,400.00	3%	75%	\$0.07	753	789	AEG study for PN&L
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	16,457.92	20	\$120,000.00	10%	30%	\$0.07	132	133	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	4,912.73	5	\$5,400.00	6%	75%	\$0.07	136	137	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	1,349.05	7	\$1,398.00	1%	2%	\$0.05	0	0	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	New	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	New	5,664.70	5	\$1,200.00	0%	75%	\$0.02	171	172	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	New	14,431.41	5	\$993.00	25%	65%	\$0.01	87	88	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	New	2,000.60	15	\$66.00	15%	25%	\$0.00	8	8	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	New	159.50	15	\$9.00	15%	75%	\$0.00	4	4	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	New	3,413.13	15	\$2,421.00	1%	75%	\$0.05	101	102	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	New	10,504.59	20	\$37,500.00	1%	30%	\$0.22	121	122	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	New	1,204.84	13	\$112.67	35%	at stock turnover	\$0.01	50	48	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	5,107.85	5	\$5,400.00	6%	75%	\$0.07	142	143	AEG study for PN&L
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	678,142.75	23	\$856,699.80	8%	at stock turnover	\$0.01	159	137	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	Existing	384,362.05	23	\$141,864.54	19%	at stock turnover	\$0.03	868	876	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	282,315.55	10	\$4,070.00	15%	75%	\$0.00	604	691	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	26,250.89	15	\$10,960.00	15%	75%	\$0.02	50	70	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	Existing	10,112.82	15	\$3,860.00	15%	75%	\$0.02	19	27	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	170,670.59	15	\$39,000.00	45%	85%	\$0.02	989	1,197	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	Existing	299,183.38	15	\$105,000.00	10%	75%	\$0.02	3,149	4,375	E3T Website
Data Center	Cooling	De-stratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	Existing	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	45,919.97	10	\$7,500.00	15%	35%	\$0.01	152	184	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	436,052.23	15	\$17,860.00	15%	25%	\$0.00	5	6	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	83,274.44	15	\$15,875.00	20%	65%	\$0.01	647	751	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	Existing	165,902.67	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	597,958.05	23	\$705,037.11	7%	at stock turnover	\$0.01	126	126	BEST Simulation
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	7,850.53	18	\$100.00	15%	50%	\$0.00	49	58	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	Existing	332,484.42	10	\$31,695.00	18%	75%	\$0.01	1,428	1,814	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	143,060.83	15	\$1,300.00	15%	75%	\$0.00	1,529	1,720	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	80,952.21	50	\$125,000.00	15%	75%	\$0.05	747	1,129	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	36,732.05	45	\$63,135.00	15%	35%	\$0.05	112	147	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	29,069.05	20	\$410.00	15%	35%	\$0.00	104	116	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	75,105.25	45	\$34,640.00	15%	35%	\$0.03	244	301	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	49,210.25	20	\$17,500.00	15%	50%	\$0.01	287	345	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	Existing	260,651.46	15	\$135,311.60	1%	at stock turnover	\$0.04	23	22	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	82,243.82	3	\$30,500.00	10%	75%	\$0.01	837	1,071	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	Existing	710,648.46	23	\$2,863,428.10	45%	at stock turnover	\$0.38	2,066	1,730	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$139,370.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	Existing	579,376.14	23	\$214,647.22	19%	at stock turnover	\$0.03	1,337	1,332	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	163,710.77	10	\$4,070.00	15%	75%	\$0.00	332	410	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	202,984.28	4	\$4,070.00	15%	75%	\$0.00	406	514	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	19,299.40	15	\$10,960.00	15%	75%	\$0.03	34	53	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	Existing	8,799.87	15	\$50,395.00	15%	75%	\$0.29	15	24	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	291,776.60	20	\$200,000.00	10%	15%	\$0.02	155	165	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	558,509.31	23	\$727,774.55	9%	at stock turnover	\$0.01	174	148	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	New	331,866.88	23	\$121,661.61	18%	at stock turnover	\$0.03	814	822	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	224,094.33	10	\$4,070.00	15%	75%	\$0.00	273	283	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	25,616.38	15	\$10,960.00	15%	75%	\$0.02	31	32	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$3,860.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	New	54,674.48	3	\$48,000.00	10%	75%	\$0.03	374	398	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	34,096.83	15	\$39,000.00	45%	85%	\$0.06	126	134	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	New	204,103.38	15	\$105,000.00	10%	75%	\$0.03	1,407	1,499	E3T Website
Data Center	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	New	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	31,678.26	10	\$7,500.00	15%	50%	\$0.01	118	126	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	350,001.54	15	\$17,860.00	15%	25%	\$0.00	2	2	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	New	57,211.34	15	\$15,875.00	20%	65%	\$0.01	275	293	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	New	165,902.67	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	492,634.89	23	\$598,935.66	8%	at stock turnover	\$0.01	142	142	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	14,581.99	18	\$100.00	15%	35%	\$0.00	31	33	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	New	228,446.80	10	\$31,695.00	18%	75%	\$0.01	224	238	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	112,148.00	15	\$1,300.00	15%	75%	\$0.00	722	769	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	56,327.91	50	\$125,000.00	15%	75%	\$0.08	356	379	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	-154.38	45	\$63,135.00	15%	50%	\$0.11	-1	-1	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	36,712.32	20	\$410.00	15%	50%	\$0.00	138	147	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	51,573.71	45	\$34,640.00	15%	50%	\$0.04	192	204	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	33,574.43	20	\$17,500.00	15%	50%	\$0.02	125	133	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	-482.26	45	\$38,550.00	15%	50%	\$1.85	-2	-2	BEST Simulation
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	New	229,548.89	15	\$128,413.12	1%	at stock turnover	\$0.04	19	18	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	New	581,029.98	23	\$2,432,509.12	42%	at stock turnover	\$0.39	1,812	1,496	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	New	0.00	15	\$139,370.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	New	506,520.67	23	\$184,079.31	21%	at stock turnover	\$0.03	1,505	1,500	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	118,344.12	10	\$4,070.00	15%	75%	\$0.00	164	176	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	New	147,064.71	4	\$4,070.00	15%	75%	\$0.00	204	219	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	15,855.77	15	\$10,960.00	15%	75%	\$0.03	22	23	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$50,395.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	205.33	15	\$15,875.00	20%	65%	\$0.01	4	6	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	559.52	5	\$960.00	15%	25%	\$0.09	2	4	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	50.70	10	\$1,095.00	33%	60%	\$1.11	1	1	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	Existing	3,215.69	10	\$1,715.00	15%	30%	\$0.03	18	36	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	311.18	15	-\$13.73	100%	at stock turnover	\$0.01	1	2	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	396.74	15	\$108.79	100%	at stock turnover	\$0.01	142	144	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	225.74	15	\$206.90	100%	at stock turnover	\$0.03	53	51	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	48.99	15	\$4.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	203.54	3	\$30,500.00	10%	75%	\$0.01	5	8	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	33.19	6	\$0.79	100%	at stock turnover	\$0.01	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	27.01	15	\$14.34	100%	at stock turnover	\$0.03	26	18	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	994.03	20	\$200,000.00	10%	15%	\$0.02	1	2	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	163.37	3	\$48,000.00	10%	75%	\$0.03	2	3	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	179.94	15	\$15,875.00	20%	65%	\$0.01	2	3	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	480.62	5	\$960.00	15%	25%	\$0.09	1	2	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	51.95	10	\$1,095.00	44%	60%	\$0.91	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	New	2,816.27	10	\$1,715.00	15%	30%	\$0.03	9	13	AEG research & analysis
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	311.18	15	-\$13.73	100%	at stock turnover	\$0.01	0	2	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	396.74	15	\$108.79	100%	at stock turnover	\$0.01	108	110	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	225.74	15	\$206.90	100%	at stock turnover	\$0.03	40	40	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	48.99	15	\$4.80	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	33.19	6	\$0.79	100%	at stock turnover	\$0.01	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	27.01	15	\$14.34	100%	at stock turnover	\$0.02	19	11	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	7,162.19	15	\$2.75	4%	at stock turnover	\$0.00	1	1	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	729.95	10	\$2.92	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,237.48	18	\$12.40	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,314.24	10	\$6.58	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	7,162.19	15	\$3.03	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	729.95	10	\$3.22	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,237.48	18	\$13.64	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,314.24	10	\$7.24	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	3,696.62	23	\$77,823.54	8%	at stock turnover	\$0.01	1	1	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	-12,179.56	15	\$39,000.00	45%	85%	\$0.02	-40	-41	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	4,383.37	10	\$7,500.00	15%	35%	\$0.01	8	8	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	59,341.46	15	\$17,860.00	15%	25%	\$0.00	48	46	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	7,424.81	15	\$15,875.00	20%	65%	\$0.01	32	32	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	18,014.36	23	\$40,010.23	7%	at stock turnover	\$0.01	3	3	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	-160.99	18	\$100.00	15%	50%	\$0.00	-1	-1	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	-11,637.86	15	\$1,300.00	15%	75%	\$0.00	-66	-67	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	28,881.47	45	\$63,135.00	15%	35%	\$0.05	54	55	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	-2,142.43	20	\$410.00	15%	35%	\$0.00	-4	-4	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	7,380.72	45	\$34,640.00	15%	35%	\$0.03	14	14	BPA
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	5,733.20	20	\$17,500.00	15%	50%	\$0.01	19	19	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	8,817.41	3	\$30,500.00	10%	75%	\$0.01	55	55	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	Existing	0.00	14	\$223,725.00	3%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	39,874.87	20	\$200,000.00	10%	15%	\$0.02	10	10	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	9,673.29	23	\$69,201.45	9%	at stock turnover	\$0.01	3	2	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	New	8,435.58	3	\$48,000.00	10%	75%	\$0.03	28	28	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	-4,343.14	15	\$39,000.00	45%	85%	\$0.06	-8	-8	BEST Simulation
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	4,336.74	10	\$7,500.00	15%	50%	\$0.01	8	8	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	60,488.17	15	\$17,860.00	15%	25%	\$0.00	25	25	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	New	7,329.84	15	\$15,875.00	20%	65%	\$0.01	17	17	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	16,916.25	23	\$39,734.37	8%	at stock turnover	\$0.01	4	5	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	-1,359.95	18	\$100.00	15%	35%	\$0.00	-1	-1	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	-10,333.78	15	\$1,300.00	15%	75%	\$0.00	-32	-32	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	27,442.26	45	\$63,135.00	15%	50%	\$0.11	49	49	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	-9,591.14	20	\$410.00	15%	50%	\$0.00	-17	-17	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	7,058.99	45	\$34,640.00	15%	50%	\$0.04	13	13	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	5,601.21	20	\$17,500.00	15%	50%	\$0.02	10	10	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	1,916.96	45	\$38,550.00	15%	50%	\$1.85	3	3	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	New	0.00	14	\$223,725.00	6%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	3,261.02	15	\$15,875.00	20%	65%	\$0.01	57	90	BEST Simulation
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	631.50	15	-\$27.87	100%	at stock turnover	\$0.01	2	8	EIA 2011
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	805.15	15	\$220.77	100%	at stock turnover	\$0.01	573	584	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	17,972.41	5	\$36,900.00	5%	15%	\$0.10	22	46	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	Existing	28,324.94	5	\$2,135.00	15%	50%	\$0.00	131	245	Illinois TRM
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	17,288.31	12	\$20,000.00	3%	25%	\$0.06	136	293	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	Existing	2,626.67	16	\$1,345.00	1%	3%	\$0.03	2	5	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	18,796.68	10	\$5,565.00	7%	45%	\$0.02	188	378	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	Existing	0.00	25	\$61,500.00	15%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$6,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	Existing	2,329.59	5	\$5,500.00	10%	25%	\$0.09	3	11	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	321.54	15	\$294.71	100%	at stock turnover	\$0.03	1,978	1,919	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	69.78	15	\$6.83	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	2,916.63	3	\$30,500.00	10%	75%	\$0.01	70	116	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	230.65	6	\$5.47	100%	at stock turnover	\$0.01	0	2	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	187.72	15	\$99.64	100%	at stock turnover	\$0.03	465	326	EIA 2011
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	14,707.55	20	\$200,000.00	10%	15%	\$0.02	16	23	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	2,406.11	3	\$48,000.00	10%	75%	\$0.03	33	49	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	2,662.25	15	\$15,875.00	20%	65%	\$0.01	26	38	BEST Simulation
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	631.50	15	-\$27.87	100%	at stock turnover	\$0.01	2	6	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	805.15	15	\$220.77	100%	at stock turnover	\$0.01	437	446	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	15,343.25	5	\$36,900.00	5%	15%	\$0.11	11	16	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	New	24,106.83	5	\$2,135.00	15%	50%	\$0.00	63	90	Illinois TRM
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	14,986.20	12	\$20,000.00	4%	25%	\$0.06	66	97	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	New	2,249.14	16	\$1,345.00	1%	3%	\$0.03	1	1	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	15,626.01	10	\$5,565.00	22%	45%	\$0.02	35	52	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	New	0.00	25	\$61,500.00	18%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Data Center bldg.	New	0.00	8	\$6,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	New	1,573.99	5	\$5,500.00	10%	25%	\$0.13	1	2	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	321.54	15	\$294.71	100%	at stock turnover	\$0.03	1,509	1,475	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	69.78	15	\$6.83	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	230.65	6	\$5.47	100%	at stock turnover	\$0.01	0	1	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	187.72	15	\$99.64	100%	at stock turnover	\$0.02	336	191	EIA 2011
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	6,785.52	7	\$6,985.00	1%	4%	\$0.05	5	5	Developed from RTF
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	Existing	99.35	7	\$155.00	1%	3%	\$0.12	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	Existing	4,852.56	10	\$975.00	1%	3%	\$0.02	2	2	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	Existing	48,298.52	15	\$18,860.00	15%	75%	\$0.03	531	531	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	Existing	899.88	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	Existing	161.46	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	7,748.70	7	\$6,985.00	1%	2%	\$0.04	1	1	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	New	113.46	7	\$10.00	1%	3%	\$0.01	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	New	48,298.52	15	\$18,860.00	15%	75%	\$0.03	312	312	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	New	899.88	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	New	161.46	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	New	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	Existing	557,281.99	20	\$500,000.00	10%	50%	\$0.06	6,514	7,925	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	Existing	1,134,511.75	3	\$52,500.00	10%	15%	\$0.00	1,673	2,010	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	77,241.44	6	\$579.57	100%	at stock turnover	\$0.00	539	569	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	Existing	19,025.61	4	\$1,325.00	10%	50%	\$0.00	1,015	1,062	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	6,082.84	6	\$150.77	100%	at stock turnover	\$0.00	42	45	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	13,435.16	6	\$908.39	100%	at stock turnover	\$0.01	38	40	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	56,707.96	5	\$2,000.00	10%	25%	\$0.00	1,144	1,188	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	3,142.11	6	\$9.43	40%	at stock turnover	\$0.00	16	17	Assumed same as Desktop
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	16,776.01	6	\$214.49	100%	at stock turnover	\$0.00	27	28	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,127,339.34	6	\$8,458.80	100%	at stock turnover	\$0.00	20,567	21,176	Assumed same as Desktop
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	New	532,149.74	20	\$150,000.00	10%	50%	\$0.02	2,960	3,257	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	New	1,086,308.17	3	\$52,500.00	10%	15%	\$0.00	756	832	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	77,241.44	6	\$579.57	100%	at stock turnover	\$0.00	379	375	ENERGY STAR Calculator
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	New	19,819.30	4	\$1,325.00	10%	50%	\$0.00	531	548	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	6,082.84	6	\$150.77	100%	at stock turnover	\$0.00	30	30	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	13,435.16	6	\$908.39	100%	at stock turnover	\$0.01	26	26	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	59,228.42	5	\$2,000.00	10%	25%	\$0.00	595	614	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	3,142.11	6	\$10.37	44%	at stock turnover	\$0.00	12	12	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	16,776.01	6	\$214.49	100%	at stock turnover	\$0.00	16	16	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,127,339.34	6	\$8,458.80	100%	at stock turnover	\$0.00	12,678	12,453	Assumed same as Desktop
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$13,155.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	Existing	282.95	9	\$1.62	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	Existing	6,150.00	9	\$475.00	0%	10%	\$0.01	2	2	PacifiCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$39,965.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$27,815.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$16,370.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	Existing	652.69	10	\$9.65	5%	at stock turnover	\$0.00	1	0	EIA 2011
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	New	0.00	5	\$7,735.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	New	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	New	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	New	282.95	9	\$1.79	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	New	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	New	6,150.00	9	\$475.00	0%	10%	\$0.01	1	1	PacificCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	New	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	New	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	New	0.00	15	\$39,965.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	New	0.00	15	\$27,815.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	New	0.00	4	\$16,370.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	New	652.69	10	\$10.61	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	6,852.04	15	\$39,000.00	45%	85%	\$0.02	36	49	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	48,795.62	15	\$15,875.00	20%	65%	\$0.01	339	449	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	28,929.94	18	\$100.00	15%	50%	\$0.00	170	230	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	-14,739.77	15	\$1,300.00	15%	75%	\$0.00	-148	-181	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	56,799.95	50	\$125,000.00	15%	75%	\$0.05	508	813	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	9,863.90	45	\$63,135.00	15%	35%	\$0.05	29	40	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	5,337.12	20	\$410.00	15%	35%	\$0.00	18	22	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	30,945.53	20	\$17,500.00	15%	50%	\$0.01	166	221	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	57,703.60	3	\$30,500.00	10%	75%	\$0.01	570	767	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	Existing	14,707.63	15	\$11,000.00	15%	75%	\$0.05	130	180	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	Existing	144,190.36	18	\$8,500.00	15%	35%	\$0.00	451	590	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	Existing	645,223.32	20	\$690,989.33	100%	at stock turnover	\$0.08	1,557	1,574	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	Existing	420,631.23	15	\$8,545.00	13%	50%	\$0.00	2,588	3,153	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	171,937.40	20	\$200,000.00	10%	15%	\$0.02	88	92	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	New	35,448.87	3	\$48,000.00	10%	75%	\$0.03	236	245	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	5,308.70	15	\$39,000.00	45%	85%	\$0.06	19	20	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	New	31,346.63	15	\$15,875.00	20%	65%	\$0.01	145	150	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	20,126.84	18	\$100.00	15%	35%	\$0.00	42	43	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	-10,424.41	15	\$1,300.00	15%	75%	\$0.00	-65	-67	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	36,315.44	50	\$125,000.00	15%	75%	\$0.08	223	232	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	11,488.41	45	\$63,135.00	15%	50%	\$0.11	41	43	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	-2,333.03	20	\$410.00	15%	50%	\$0.00	-8	-9	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	19,785.53	20	\$17,500.00	15%	50%	\$0.02	71	74	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	228.38	45	\$38,550.00	15%	50%	\$1.85	1	1	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	New	9,680.02	15	\$6,500.00	15%	75%	\$0.04	60	62	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	New	93,199.91	18	\$8,500.00	15%	35%	\$0.01	192	199	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	New	579,884.25	20	\$676,679.54	100%	at stock turnover	\$0.09	1,288	1,304	BEST Simulation
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	New	276,104.82	15	\$8,545.00	19%	50%	\$0.00	872	904	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	2,737.03	5	\$9,000.00	3%	75%	\$0.23	13	13	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	4,055.03	7	\$6,985.00	1%	4%	\$0.05	1	1	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	Existing	15,282.48	20	\$5,585.00	1%	7%	\$0.03	6	6	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	2,813.24	5	\$2,000.00	1%	10%	\$0.05	2	2	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	Existing	7,509.45	5	\$550.00	25%	65%	\$0.01	7	8	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	Existing	951.22	15	\$505.00	15%	75%	\$0.04	4	4	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	Existing	150.76	15	\$15.00	15%	75%	\$0.01	1	1	DEER
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	1,762.51	15	\$6,985.00	16%	75%	\$0.28	7	7	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	Existing	5,582.46	20	\$62,500.00	1%	30%	\$0.70	10	11	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	Existing	623.70	13	\$35.50	68%	at stock turnover	\$0.00	3	3	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	2,621.74	5	\$9,000.00	3%	75%	\$0.23	12	13	AEG study for PN&L
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	9,145.85	20	\$200,000.00	10%	15%	\$0.02	2	2	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	2,534.06	5	\$9,000.00	6%	75%	\$0.23	6	6	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	4,077.72	7	\$6,985.00	1%	2%	\$0.04	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	New	15,316.83	20	\$5,585.00	1%	8%	\$0.03	4	4	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	New	2,820.97	5	\$2,000.00	0%	75%	\$0.05	7	7	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	New	7,489.32	5	\$550.00	25%	65%	\$0.01	4	4	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	New	951.44	15	\$505.00	15%	75%	\$0.04	2	2	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	New	151.04	15	\$15.00	15%	75%	\$0.01	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	New	1,703.46	15	\$6,985.00	1%	75%	\$0.28	4	4	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	New	5,416.72	20	\$62,500.00	1%	30%	\$0.71	5	5	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	New	623.70	13	\$35.50	68%	at stock turnover	\$0.00	2	2	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	2,634.67	5	\$9,000.00	6%	75%	\$0.23	6	6	AEG study for PN&L
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	49,964.33	23	\$537,224.61	4%	at stock turnover	\$0.01	156	137	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	Existing	25,097.54	23	\$6,781.06	6%	at stock turnover	\$0.02	271	273	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	18,897.76	10	\$814.00	15%	75%	\$0.00	195	215	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	1,830.73	15	\$2,192.00	15%	75%	\$0.07	16	23	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	Existing	892.56	15	\$1,740.00	15%	75%	\$0.11	8	11	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	20,866.19	15	\$15,600.00	45%	85%	\$0.06	1,724	1,971	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	De-stratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	Existing	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	3,378.78	10	\$3,000.00	15%	35%	\$0.04	164	182	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	5,686.48	15	\$6,350.00	20%	65%	\$0.03	629	691	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	Existing	11,182.24	15	\$101,800.19	0%	at stock turnover	\$0.73	253	239	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	19,834.66	23	\$278,335.56	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	161.31	18	\$46.00	15%	25%	\$0.01	4	5	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	Existing	24,070.21	10	\$14,300.00	18%	75%	\$0.04	1,347	1,582	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	9,494.47	15	\$260.00	15%	75%	\$0.01	1,430	1,538	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	5,815.81	50	\$50,000.00	15%	25%	\$0.42	128	175	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	19,097.84	45	\$25,254.00	15%	35%	\$0.09	874	1,031	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	4,980.14	45	\$13,856.00	15%	35%	\$0.11	224	269	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	3,354.49	20	\$7,000.00	15%	50%	\$0.07	278	317	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	-1,766.03	45	\$15,420.00	15%	35%	\$0.18	-79	-95	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	Existing	17,568.53	15	\$9,120.32	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	5,911.50	3	\$12,200.00	10%	75%	\$0.06	861	1,037	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	Existing	15,066.32	23	\$106,000.85	82%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$62,878.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	4,294.87	3	\$6,350.00	4%	27%	\$0.04	221	325	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	Existing	37,450.35	23	\$10,260.04	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$2,192.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$10,078.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	18,262.73	20	\$80,000.00	10%	15%	\$0.08	130	131	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	33,846.66	23	\$445,328.09	4%	at stock turnover	\$0.01	103	92	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	New	21,227.24	23	\$6,009.93	7%	at stock turnover	\$0.02	245	247	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	14,982.98	10	\$814.00	15%	75%	\$0.00	85	88	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	1,789.38	15	\$2,192.00	15%	75%	\$0.07	10	10	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$1,740.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	New	3,404.90	3	\$19,200.00	10%	75%	\$0.11	312	314	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	7,247.83	15	\$15,600.00	45%	85%	\$0.17	358	361	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	New	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	Destratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	New	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	1,969.44	10	\$3,000.00	15%	50%	\$0.05	98	99	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	New	3,328.50	15	\$6,350.00	20%	65%	\$0.04	213	215	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	New	11,182.24	15	\$111,980.21	0%	at stock turnover	\$0.80	209	197	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	9,478.87	23	\$230,724.06	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	250.86	18	\$72.00	15%	25%	\$0.01	4	4	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	New	13,381.97	10	\$14,300.00	18%	75%	\$0.08	164	164	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	6,323.30	15	\$260.00	15%	75%	\$0.02	541	545	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	3,323.93	50	\$50,000.00	15%	25%	\$0.69	47	47	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	3,549.68	45	\$25,254.00	15%	50%	\$0.39	175	177	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	3,008.87	45	\$13,856.00	15%	50%	\$0.15	149	150	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	2,067.77	20	\$7,000.00	15%	50%	\$0.09	103	104	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	-29.91	45	\$15,420.00	15%	50%	\$1.15	-1	-1	BEST Simulation
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	New	15,472.14	15	\$8,655.35	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	New	9,773.02	23	\$87,868.57	86%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	New	0.00	15	\$62,878.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	2,577.77	3	\$6,350.00	4%	27%	\$0.05	110	110	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	New	31,877.79	23	\$9,093.29	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	0.00	15	\$2,192.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$10,078.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	240.78	15	\$6,350.00	20%	65%	\$0.03	62	96	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	701.54	5	\$2,736.00	15%	25%	\$0.21	39	76	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	94.04	10	\$982.00	33%	60%	\$0.55	14	28	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	Existing	4,157.16	10	\$1,536.00	15%	30%	\$0.02	366	657	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	308.52	15	-\$7.33	100%	at stock turnover	\$0.01	10	30	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	393.36	15	\$58.08	100%	at stock turnover	\$0.01	2,627	2,608	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	80.70	15	\$39.83	100%	at stock turnover	\$0.02	786	763	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	17.51	15	\$0.92	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	236.81	3	\$12,200.00	10%	75%	\$0.06	86	136	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	51.26	6	\$0.66	100%	at stock turnover	\$0.01	0	2	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	41.72	15	\$11.92	100%	at stock turnover	\$0.01	258	194	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	206.70	3	\$6,350.00	4%	27%	\$0.04	27	58	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	1,162.34	20	\$80,000.00	10%	15%	\$0.08	16	24	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	204.22	3	\$19,200.00	10%	75%	\$0.11	36	54	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	210.39	15	\$6,350.00	20%	65%	\$0.04	26	39	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	600.77	5	\$2,736.00	15%	25%	\$0.21	16	24	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	50.45	10	\$982.00	44%	60%	\$0.89	2	3	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	New	3,628.37	10	\$1,536.00	15%	30%	\$0.02	151	223	AEG research & analysis
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	308.52	15	-\$7.33	100%	at stock turnover	\$0.01	6	17	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	393.36	15	\$58.08	100%	at stock turnover	\$0.01	1,619	1,598	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	80.70	15	\$39.83	100%	at stock turnover	\$0.02	531	520	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	17.51	15	\$0.92	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	51.26	6	\$0.66	100%	at stock turnover	\$0.01	0	1	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	41.72	15	\$11.92	100%	at stock turnover	\$0.01	210	118	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	178.24	3	\$6,350.00	4%	27%	\$0.05	15	22	BEST Simulation
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	10,875.58	15	\$70.53	55%	at stock turnover	\$0.00	194	190	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	1,108.40	10	\$180.38	61%	at stock turnover	\$0.01	165	144	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	1,879.08	18	\$317.90	55%	at stock turnover	\$0.01	26	26	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	1,995.64	10	\$362.06	54%	at stock turnover	\$0.01	179	155	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	10,875.58	15	\$98.74	77%	at stock turnover	\$0.00	205	200	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	1,108.40	10	\$252.53	85%	at stock turnover	\$0.02	144	131	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	1,879.08	18	\$445.06	77%	at stock turnover	\$0.02	23	23	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	1,995.64	10	\$506.88	76%	at stock turnover	\$0.02	156	141	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	2,883.89	23	\$5,930.27	4%	at stock turnover	\$0.01	8	7	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	-4,495.19	15	\$15,600.00	45%	85%	\$0.06	-71	-72	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	2,292.17	10	\$3,000.00	15%	35%	\$0.04	21	21	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	32,328.59	15	\$3,572.00	15%	25%	\$0.01	18	17	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	3,859.14	15	\$6,350.00	20%	65%	\$0.03	80	79	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	6,502.74	23	\$5,286.72	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	41.94	18	\$46.00	15%	25%	\$0.01	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	-5,939.27	15	\$260.00	15%	75%	\$0.01	-161	-162	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	-291.77	45	\$25,254.00	15%	35%	\$0.09	-3	-3	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	3,823.18	45	\$13,856.00	15%	35%	\$0.11	35	35	BPA
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	2,971.85	20	\$7,000.00	15%	50%	\$0.07	47	47	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	8,671.95	45	\$15,420.00	15%	35%	\$0.18	79	79	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	4,484.28	3	\$12,200.00	10%	75%	\$0.06	131	133	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	Existing	0.00	14	\$94,518.00	3%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	3,296.10	3	\$6,350.00	4%	27%	\$0.04	34	35	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	20,695.54	20	\$80,000.00	10%	15%	\$0.08	22	22	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	2,607.56	23	\$5,068.74	4%	at stock turnover	\$0.01	7	6	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	New	4,287.00	3	\$19,200.00	10%	75%	\$0.11	59	59	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	-1,332.40	15	\$15,600.00	45%	85%	\$0.17	-10	-10	BEST Simulation
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	2,231.86	10	\$3,000.00	15%	50%	\$0.05	17	17	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	31,665.89	15	\$3,572.00	15%	25%	\$0.01	8	8	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	New	3,772.23	15	\$6,350.00	20%	65%	\$0.04	36	36	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	5,186.29	23	\$4,382.39	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	48.55	18	\$72.00	15%	25%	\$0.01	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	-5,210.85	15	\$260.00	15%	75%	\$0.02	-66	-66	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	610.87	45	\$25,254.00	15%	50%	\$0.39	5	5	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	3,632.81	45	\$13,856.00	15%	50%	\$0.15	27	27	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	2,857.67	20	\$7,000.00	15%	50%	\$0.09	21	21	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	1,018.11	45	\$15,420.00	15%	50%	\$1.15	8	8	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	New	0.00	14	\$94,518.00	6%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	3,112.05	3	\$6,350.00	4%	27%	\$0.05	20	20	BEST Simulation
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,987.64	15	\$6,350.00	20%	65%	\$0.03	484	791	BEST Simulation
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,040.51	15	-\$24.73	100%	at stock turnover	\$0.01	29	90	EIA 2011
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,326.64	15	\$195.87	100%	at stock turnover	\$0.01	7,860	7,804	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	10,658.79	5	\$13,522.00	5%	15%	\$0.06	187	398	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	Existing	16,860.12	5	\$698.00	15%	50%	\$0.00	1,121	2,105	Illinois TRM
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	11,824.96	12	\$8,000.00	3%	25%	\$0.04	1,375	2,852	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	Existing	1,790.04	16	\$440.00	1%	3%	\$0.01	19	45	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	12,817.43	10	\$1,822.00	7%	45%	\$0.01	1,893	3,678	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	Existing	0.00	25	\$24,600.00	15%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 20,000 sqft Grocery bldg.	Existing	0.00	8	\$2,018.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	Existing	1,402.92	5	\$2,200.00	10%	25%	\$0.07	30	86	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	302.61	15	\$149.35	100%	at stock turnover	\$0.02	16,583	16,113	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	65.67	15	\$3.46	100%	at stock turnover	\$0.01	0	3	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,868.41	3	\$12,200.00	10%	75%	\$0.06	636	1,074	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	261.15	6	\$3.34	100%	at stock turnover	\$0.01	0	31	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	212.55	15	\$60.75	100%	at stock turnover	\$0.01	3,903	2,933	EIA 2011
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,641.44	3	\$6,350.00	4%	27%	\$0.04	198	507	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	9,193.74	20	\$80,000.00	10%	15%	\$0.08	126	186	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	1,604.77	3	\$19,200.00	10%	75%	\$0.11	286	421	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,664.05	15	\$6,350.00	20%	65%	\$0.04	206	304	BEST Simulation
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,040.51	15	-\$24.73	100%	at stock turnover	\$0.01	18	51	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,326.64	15	\$195.87	100%	at stock turnover	\$0.01	4,845	4,783	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	8,993.06	5	\$13,522.00	5%	15%	\$0.07	84	121	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	New	13,965.13	5	\$698.00	15%	50%	\$0.00	463	668	Illinois TRM
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	10,365.50	12	\$8,000.00	4%	25%	\$0.04	586	865	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	New	1,555.66	16	\$440.00	1%	3%	\$0.01	9	13	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	10,809.35	10	\$1,822.00	22%	45%	\$0.01	315	465	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	New	0.00	25	\$24,600.00	18%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 20,000 sqft Grocery bldg.	New	0.00	8	\$2,018.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	New	1,165.14	5	\$2,200.00	10%	25%	\$0.07	14	23	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	302.61	15	\$149.35	100%	at stock turnover	\$0.02	11,212	10,973	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	65.67	15	\$3.46	100%	at stock turnover	\$0.01	0	2	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	261.15	6	\$3.34	100%	at stock turnover	\$0.01	0	10	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	212.55	15	\$60.75	100%	at stock turnover	\$0.01	3,170	1,778	EIA 2011
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,409.90	3	\$6,350.00	4%	27%	\$0.05	116	172	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	91.04	7	\$1,398.00	1%	4%	\$0.33	1	1	Developed from RTF
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	Existing	1.33	7	\$30.00	1%	3%	\$1.75	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	Existing	65.10	10	\$194.00	1%	3%	\$0.23	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	Existing	0.00	13	\$0.00	35%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	Existing	1,917.53	15	\$10,756.00	15%	75%	\$0.44	117	117	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	Existing	359.95	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	Existing	64.59	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,526.71	3	\$6,350.00	4%	27%	\$0.04	164	160	BEST Simulation
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	52.02	7	\$1,398.00	1%	2%	\$0.57	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	New	0.76	7	\$2.00	1%	3%	\$0.20	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	New	0.00	13	\$0.00	42%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	New	1,917.53	15	\$10,756.00	15%	75%	\$0.44	66	66	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	New	359.95	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	New	64.59	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,483.10	3	\$6,350.00	4%	27%	\$0.05	102	100	BEST Simulation
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	745.00	6	\$5.59	100%	at stock turnover	\$0.00	75	79	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	Existing	16.23	4	\$530.00	10%	50%	\$2.41	12	13	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	146.67	6	\$2.33	64%	at stock turnover	\$0.00	10	10	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	129.58	6	\$8.76	100%	at stock turnover	\$0.01	5	6	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	47.68	5	\$800.00	10%	25%	\$1.24	13	15	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	378.83	6	\$2.84	100%	at stock turnover	\$0.00	69	74	Assumed same as Desktop
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	161.81	6	\$2.07	100%	at stock turnover	\$0.00	4	4	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	543.67	6	\$4.08	100%	at stock turnover	\$0.00	143	147	Assumed same as Desktop
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	New	0.00	20	\$60,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	745.00	6	\$5.59	100%	at stock turnover	\$0.00	47	46	ENERGY STAR Calculator
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	New	15.54	4	\$926.00	10%	50%	\$4.35	5	6	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	146.67	6	\$2.56	70%	at stock turnover	\$0.00	7	7	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	129.58	6	\$8.76	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	26.07	5	\$800.00	10%	25%	\$2.25	3	4	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	378.83	6	\$2.84	100%	at stock turnover	\$0.00	42	42	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	161.81	6	\$2.07	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	543.67	6	\$4.08	100%	at stock turnover	\$0.00	78	77	Assumed same as Desktop
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	Existing	45,436.49	5	\$2,632.00	10%	75%	\$0.09	16,384	16,693	Developed from RTF
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	Existing	268.21	8	\$196.00	10%	75%	\$0.05	96	99	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	Existing	8,069.17	5	\$2,532.00	10%	75%	\$0.02	1,475	1,462	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	Existing	896.19	9	\$99.68	99%	at stock turnover	\$0.01	132	121	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	Existing	7,372.63	8	\$2,542.00	25%	75%	\$0.03	1,031	1,031	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	Existing	1,230.00	9	\$94.00	0%	75%	\$0.01	226	226	PacifiCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$2,306.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	16	\$162.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	Existing	4,758.51	15	\$3,348.00	14%	75%	\$0.05	4,103	4,220	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	Existing	10,079.98	15	\$5,562.00	25%	75%	\$0.04	7,231	7,221	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	Existing	7,114.95	4	\$2,220.00	25%	75%	\$0.02	164	171	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	Existing	4,134.47	10	\$1,185.15	99%	at stock turnover	\$0.02	999	872	EIA 2011
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	New	46,164.02	5	\$1,548.00	10%	75%	\$0.09	7,884	7,884	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	New	156.61	8	\$196.00	10%	75%	\$0.09	27	27	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	New	8,308.73	5	\$2,532.00	10%	75%	\$0.02	711	711	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	New	896.19	9	\$100.79	100%	at stock turnover	\$0.01	161	146	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	New	3,981.24	8	\$2,542.00	35%	75%	\$0.05	209	209	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	New	1,230.00	9	\$94.00	0%	75%	\$0.01	107	107	PacificCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	New	0.00	4	\$2,306.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	New	0.00	16	\$162.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	New	4,868.41	15	\$3,348.00	0%	75%	\$0.05	2,456	2,465	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	New	10,201.31	15	\$5,562.00	35%	75%	\$0.04	2,751	2,760	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	New	7,156.79	4	\$2,220.00	35%	75%	\$0.02	63	63	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	New	4,134.47	10	\$1,198.33	100%	at stock turnover	\$0.02	651	598	EIA 2011
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$15,600.00	45%	85%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$3,000.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,524.24	15	\$6,350.00	20%	65%	\$0.03	189	202	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	307.21	18	\$46.00	15%	25%	\$0.01	8	9	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	-427.51	15	\$260.00	15%	75%	\$0.01	-70	-76	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	1,663.21	50	\$50,000.00	15%	25%	\$0.42	42	53	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	0.00	45	\$25,254.00	15%	35%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	913.96	20	\$7,000.00	15%	50%	\$0.07	82	94	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	137.20	45	\$15,420.00	15%	35%	\$0.18	7	8	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,691.21	3	\$12,200.00	10%	75%	\$0.06	281	324	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,230.81	3	\$6,350.00	4%	27%	\$0.04	73	95	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	Existing	439.07	15	\$4,400.00	15%	75%	\$0.70	66	78	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	Existing	4,222.61	18	\$3,400.00	15%	35%	\$0.06	220	249	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	Existing	7,200.12	20	\$15,104.36	100%	at stock turnover	\$0.16	243	246	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	Existing	7,963.76	15	\$3,610.00	13%	50%	\$0.03	795	860	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	6,051.97	20	\$80,000.00	10%	15%	\$0.08	41	41	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	New	1,266.60	3	\$19,200.00	10%	75%	\$0.11	113	113	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	0.00	15	\$15,600.00	45%	85%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	0.00	10	\$3,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,168.49	15	\$6,350.00	20%	65%	\$0.04	72	72	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	234.40	18	\$72.00	15%	25%	\$0.01	3	3	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	-352.93	15	\$260.00	15%	75%	\$0.02	-29	-29	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	1,236.25	50	\$50,000.00	15%	25%	\$0.69	17	17	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	0.00	45	\$25,254.00	15%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	685.70	20	\$7,000.00	15%	50%	\$0.09	33	33	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	8.12	45	\$15,420.00	15%	50%	\$1.15	0	0	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	921.45	3	\$6,350.00	4%	27%	\$0.05	38	38	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	New	326.40	15	\$2,600.00	15%	75%	\$0.55	27	27	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	New	3,213.44	18	\$3,400.00	15%	35%	\$0.08	88	88	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	New	5,634.10	20	\$13,587.22	100%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	New	5,490.98	15	\$3,610.00	19%	50%	\$0.05	230	230	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	2,739.41	5	\$3,600.00	3%	75%	\$0.09	215	230	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	195.52	7	\$1,398.00	1%	4%	\$0.33	1	1	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	2,940.61	5	\$800.00	1%	10%	\$0.02	30	31	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	Existing	7,594.06	5	\$1,876.00	25%	65%	\$0.02	127	129	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$890.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	Existing	16.39	15	\$6.00	15%	75%	\$0.03	1	1	DEER
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	1,839.54	15	\$1,976.00	16%	75%	\$0.08	120	124	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	Existing	5,832.10	20	\$25,000.00	1%	30%	\$0.28	181	199	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	Existing	631.20	13	\$32.80	63%	at stock turnover	\$0.00	48	46	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	2,860.60	5	\$3,600.00	3%	75%	\$0.09	227	237	AEG study for PN&L
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	8,864.81	20	\$80,000.00	10%	15%	\$0.08	23	23	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	2,752.41	5	\$3,600.00	6%	75%	\$0.09	99	100	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	109.11	7	\$1,398.00	1%	2%	\$0.57	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	New	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	New	2,973.22	5	\$800.00	0%	75%	\$0.02	116	117	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	New	7,574.64	5	\$1,876.00	25%	65%	\$0.02	59	60	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$890.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	New	8.51	15	\$6.00	15%	75%	\$0.05	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	New	1,776.63	15	\$1,976.00	1%	75%	\$0.08	68	69	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	New	5,658.05	20	\$25,000.00	1%	30%	\$0.28	85	85	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	New	630.99	13	\$31.97	63%	at stock turnover	\$0.00	34	33	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	2,647.08	5	\$3,600.00	6%	75%	\$0.09	95	96	AEG study for PN&L
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	98,770.16	23	\$100,519.64	1%	at stock turnover	\$0.02	121	116	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	Existing	59,773.99	23	\$24,654.76	17%	at stock turnover	\$0.03	1,196	1,207	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	44,907.08	10	\$813.00	15%	75%	\$0.00	1,470	1,634	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	10,807.69	15	\$1,311.00	15%	75%	\$0.01	345	402	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	Existing	1,461.94	15	\$2,628.00	15%	75%	\$0.11	43	57	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	7,752.83	15	\$11,700.00	45%	85%	\$0.16	731	915	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	De-stratification Fans (HVLS)	per 30,000 sqft Health bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	7,138.66	10	\$4,500.00	15%	35%	\$0.02	407	481	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	65,328.37	15	\$3,573.00	15%	25%	\$0.00	8	9	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	Existing	12,010.77	15	\$9,525.00	20%	65%	\$0.02	1,557	1,822	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	Existing	24,127.62	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	86,993.84	23	\$82,657.06	1%	at stock turnover	\$0.02	104	104	BEST Simulation
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	3,251.21	18	\$69,630.00	15%	50%	\$2.00	304	440	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	Existing	47,330.50	10	\$21,588.00	18%	75%	\$0.03	3,553	4,687	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	12,740.26	50	\$75,000.00	15%	25%	\$0.25	341	492	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	3,415.16	45	\$37,881.00	15%	35%	\$0.18	184	230	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	13,382.18	20	\$246.00	15%	35%	\$0.00	796	902	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	10,982.53	45	\$20,784.00	15%	35%	\$0.05	605	740	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	7,595.53	20	\$10,500.00	15%	50%	\$0.03	756	896	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	-3,926.93	45	\$23,130.00	15%	35%	\$0.05	-215	-265	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	Existing	37,907.16	15	\$19,678.69	0%	at stock turnover	\$0.04	45	42	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	13,035.98	3	\$18,300.00	10%	75%	\$0.03	2,326	2,856	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	Existing	103,348.50	23	\$335,966.12	11%	at stock turnover	\$0.31	1,069	895	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	Existing	0.00	15	\$94,923.00	15%	75%	\$10.00	0	0	DEER
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	9,485.89	3	\$9,525.00	4%	28%	\$0.02	625	989	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	Existing	98,360.46	23	\$37,303.72	69%	at stock turnover	\$0.03	971	971	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	26,283.81	10	\$813.00	15%	75%	\$0.00	3,213	3,972	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	Existing	33,517.44	4	\$813.00	15%	75%	\$0.00	4,043	5,122	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	14,558.46	15	\$1,311.00	15%	75%	\$0.01	1,724	2,259	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	Existing	1,351.00	15	\$6,030.00	15%	75%	\$0.25	147	220	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	40,161.94	20	\$120,000.00	10%	25%	\$0.05	1,413	1,448	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	94,335.25	23	\$83,918.65	1%	at stock turnover	\$0.02	166	158	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	New	43,662.37	23	\$16,177.74	17%	at stock turnover	\$0.03	1,061	1,072	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	26,765.33	10	\$813.00	15%	75%	\$0.00	659	671	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	7,661.95	15	\$1,311.00	15%	75%	\$0.01	188	192	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$2,628.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	New	8,211.30	3	\$28,800.00	10%	75%	\$0.06	1,248	1,279	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	Destratification Fans (HVLS)	per 30,000 sqft Health bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	4,360.86	10	\$4,500.00	15%	50%	\$0.02	358	367	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	53,128.72	15	\$3,573.00	15%	25%	\$0.00	5	5	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	New	7,369.83	15	\$9,525.00	20%	65%	\$0.02	779	798	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	New	24,127.62	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	83,139.15	23	\$69,006.10	1%	at stock turnover	\$0.02	143	143	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	New	26,524.95	10	\$21,586,680.00	18%	75%	\$50.89	608	622	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	8,016.63	50	\$75,000.00	15%	25%	\$0.44	187	192	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	1,140.81	45	\$37,881.00	15%	50%	\$0.11	93	96	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	6,987.29	45	\$20,784.00	15%	50%	\$0.07	573	587	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	4,621.65	20	\$10,500.00	15%	50%	\$0.04	380	389	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	-72.40	45	\$23,130.00	15%	50%	\$0.41	-6	-6	BEST Simulation
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	New	33,383.84	15	\$18,675.42	0%	at stock turnover	\$0.04	41	39	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	New	98,885.80	23	\$280,480.74	11%	at stock turnover	\$0.26	1,460	1,210	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	New	0.00	15	\$56,802.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	New	5,986.24	3	\$9,525.00	4%	28%	\$0.03	440	450	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	New	72,842.04	23	\$24,477.63	69%	at stock turnover	\$0.03	1,020	1,020	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	14,884.94	10	\$813.00	15%	75%	\$0.00	1,480	1,500	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	New	18,986.84	4	\$813.00	15%	75%	\$0.00	1,884	1,909	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	8,420.53	15	\$1,311.00	15%	75%	\$0.01	833	844	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$6,030.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	144.87	15	\$9,525.00	20%	65%	\$0.02	43	67	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	391.15	5	\$1,920.00	15%	25%	\$0.26	25	49	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	25.85	10	\$1,431.00	33%	60%	\$2.90	4	9	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	Existing	2,278.49	10	\$2,241.00	15%	30%	\$0.06	226	420	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	428.61	15	-\$13.24	100%	at stock turnover	\$0.01	7	25	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	546.47	15	\$104.89	100%	at stock turnover	\$0.01	1,952	1,964	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	83.90	15	\$53.83	100%	at stock turnover	\$0.02	438	426	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	18.21	15	\$1.25	100%	at stock turnover	\$0.01	0	0	EIA 2011
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	132.03	3	\$18,300.00	10%	75%	\$0.03	55	88	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	71.65	6	\$1.19	100%	at stock turnover	\$0.01	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	58.31	15	\$21.67	100%	at stock turnover	\$0.02	88	64	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	124.35	3	\$9,525.00	4%	28%	\$0.02	20	40	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	709.34	20	\$120,000.00	10%	25%	\$0.05	47	70	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	113.67	3	\$28,800.00	10%	75%	\$0.06	32	48	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	128.40	15	\$9,525.00	20%	65%	\$0.02	25	38	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	334.41	5	\$1,920.00	15%	25%	\$0.25	15	22	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	32.87	10	\$1,431.00	44%	60%	\$1.85	2	3	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	New	1,975.58	10	\$2,241.00	15%	30%	\$0.05	130	193	AEG research & analysis
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	428.61	15	-\$13.24	100%	at stock turnover	\$0.01	7	24	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	546.47	15	\$104.89	100%	at stock turnover	\$0.01	1,918	1,946	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	83.90	15	\$53.83	100%	at stock turnover	\$0.02	416	408	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	18.21	15	\$1.25	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	71.65	6	\$1.19	100%	at stock turnover	\$0.01	0	1	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	58.31	15	\$21.67	100%	at stock turnover	\$0.02	79	45	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	99.24	3	\$9,525.00	4%	28%	\$0.03	14	20	BEST Simulation
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	24,923.27	15	\$197.01	53%	at stock turnover	\$0.00	625	612	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	2,540.09	10	\$546.86	81%	at stock turnover	\$0.02	579	503	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	4,306.24	18	\$888.03	53%	at stock turnover	\$0.02	83	83	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	4,573.36	10	\$1,063.08	70%	at stock turnover	\$0.02	607	527	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	New	24,923.27	15	\$275.81	75%	at stock turnover	\$0.00	931	911	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	New	2,540.09	10	\$677.64	100%	at stock turnover	\$0.02	626	568	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	New	4,306.24	18	\$1,243.24	75%	at stock turnover	\$0.02	107	106	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	New	4,573.36	10	\$1,488.31	98%	at stock turnover	\$0.03	741	672	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	20,483.62	23	\$29,222.58	1%	at stock turnover	\$0.02	25	24	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	-3,880.59	15	\$11,700.00	45%	85%	\$0.16	-22	-24	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	10,217.30	10	\$4,500.00	15%	35%	\$0.02	35	36	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	147,264.12	15	\$3,573.00	15%	25%	\$0.00	4	4	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	Existing	17,200.62	15	\$9,525.00	20%	65%	\$0.02	134	135	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	22,574.38	23	\$26,068.02	1%	at stock turnover	\$0.02	27	27	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	-4,109.54	18	\$69,630.00	15%	50%	\$2.03	-24	-26	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	11,253.54	45	\$37,881.00	15%	35%	\$0.18	37	39	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	-6,757.70	20	\$246.00	15%	35%	\$0.00	-23	-24	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	16,881.11	45	\$20,784.00	15%	35%	\$0.05	57	59	BPA
Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	13,247.22	20	\$10,500.00	15%	50%	\$0.03	79	81	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	38,602.87	45	\$23,130.00	15%	35%	\$0.05	130	135	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	19,796.65	3	\$18,300.00	10%	75%	\$0.03	215	225	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	Existing	0.00	14	\$73,821.00	3%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	14,407.18	3	\$9,525.00	4%	28%	\$0.02	58	63	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	84,158.03	20	\$120,000.00	10%	25%	\$0.05	144	144	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	9,034.79	23	\$25,155.19	1%	at stock turnover	\$0.02	14	13	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	New	16,946.64	3	\$28,800.00	10%	75%	\$0.06	125	125	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	9,152.77	10	\$4,500.00	15%	50%	\$0.02	36	37	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	147,264.12	15	\$3,573.00	15%	25%	\$0.00	2	2	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	New	15,469.49	15	\$9,525.00	20%	65%	\$0.02	79	80	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	18,697.99	23	\$21,762.95	1%	at stock turnover	\$0.02	29	29	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	22,118.51	45	\$37,881.00	15%	50%	\$0.11	88	88	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	14,639.15	45	\$20,784.00	15%	50%	\$0.07	58	58	BPA

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Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	11,821.52	20	\$10,500.00	15%	50%	\$0.04	47	47	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	4,024.97	45	\$23,130.00	15%	50%	\$0.41	16	16	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	New	0.00	14	\$73,821.00	6%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	New	12,540.94	3	\$9,525.00	4%	28%	\$0.03	45	45	BEST Simulation
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	2,275.11	15	\$9,525.00	20%	65%	\$0.02	627	1,046	BEST Simulation
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	605.55	15	-\$18.71	100%	at stock turnover	\$0.01	18	61	EIA 2011
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	772.07	15	\$148.19	100%	at stock turnover	\$0.01	4,790	4,820	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	13,240.17	5	\$15,285.00	5%	15%	\$0.06	268	571	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	Existing	21,221.94	5	\$1,395.00	15%	50%	\$0.00	1,650	3,044	Illinois TRM
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	13,527.85	12	\$12,000.00	3%	25%	\$0.05	1,779	3,816	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	Existing	2,030.49	16	\$879.00	1%	3%	\$0.02	25	60	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	14,651.03	10	\$3,633.00	7%	45%	\$0.01	2,450	4,917	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	Existing	0.00	25	\$18,450.00	15%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 30,000 sqft Health bldg.	Existing	0.00	8	\$4,020.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	Existing	2,706.70	5	\$3,300.00	10%	25%	\$0.05	65	195	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	239.90	15	\$153.92	100%	at stock turnover	\$0.02	24,527	23,829	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	52.06	15	\$3.57	100%	at stock turnover	\$0.01	0	4	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	2,148.09	3	\$18,300.00	10%	75%	\$0.03	829	1,426	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	219.86	6	\$3.65	100%	at stock turnover	\$0.01	0	52	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	178.94	15	\$66.49	100%	at stock turnover	\$0.02	9,259	6,745	EIA 2011
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	1,878.58	3	\$9,525.00	4%	28%	\$0.02	268	723	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	10,899.98	20	\$120,000.00	10%	25%	\$0.05	718	1,059	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	1,799.53	3	\$28,800.00	10%	75%	\$0.06	510	752	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	1,972.86	15	\$9,525.00	20%	65%	\$0.02	390	576	BEST Simulation
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	605.55	15	-\$18.71	100%	at stock turnover	\$0.01	17	59	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	772.07	15	\$148.19	100%	at stock turnover	\$0.01	4,706	4,775	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	11,267.57	5	\$15,285.00	5%	15%	\$0.06	170	243	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	New	17,801.58	5	\$1,395.00	15%	50%	\$0.00	955	1,365	Illinois TRM
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	11,386.77	12	\$12,000.00	4%	25%	\$0.05	1,023	1,509	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	New	1,776.53	16	\$879.00	1%	3%	\$0.02	16	23	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	New	12,342.17	10	\$3,633.00	22%	45%	\$0.01	574	846	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	New	0.00	25	\$18,450.00	18%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft Health bldg.	New	0.00	8	\$4,020.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	New	2,097.52	5	\$3,300.00	10%	25%	\$0.06	40	66	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	239.90	15	\$153.92	100%	at stock turnover	\$0.02	23,273	22,804	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	52.06	15	\$3.57	100%	at stock turnover	\$0.01	0	4	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	219.86	6	\$3.65	100%	at stock turnover	\$0.01	0	55	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	178.94	15	\$66.49	100%	at stock turnover	\$0.02	8,355	4,807	EIA 2011
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	1,583.49	3	\$9,525.00	4%	28%	\$0.03	217	320	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	305.34	7	\$1,398.00	1%	4%	\$0.08	4	4	Developed from RTF
Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	Existing	4.47	7	\$30.00	1%	3%	\$0.52	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	Existing	218.35	10	\$195.00	1%	3%	\$0.07	2	2	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	Existing	0.00	13	\$0.00	74%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	Existing	3,038.20	15	\$7,716.00	15%	75%	\$0.20	460	460	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	Existing	539.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	Existing	96.88	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	3,936.09	3	\$9,525.00	4%	28%	\$0.02	647	617	BEST Simulation
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	586.16	7	\$1,398.00	1%	2%	\$0.07	1	1	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	New	8.66	7	\$3.00	1%	3%	\$0.03	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	New	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	New	3,038.20	15	\$7,716.00	15%	75%	\$0.20	360	360	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	New	539.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	New	96.88	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	New	3,711.49	3	\$9,525.00	4%	28%	\$0.03	561	547	BEST Simulation
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	5,888.68	6	\$44.18	100%	at stock turnover	\$0.00	684	722	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	Existing	110.24	4	\$795.00	10%	50%	\$0.54	98	111	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	463.74	6	\$11.49	100%	at stock turnover	\$0.00	54	57	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	1,024.26	6	\$69.25	100%	at stock turnover	\$0.01	48	50	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	324.49	5	\$1,200.00	10%	25%	\$0.28	109	122	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	598.86	6	\$4.49	100%	at stock turnover	\$0.00	127	134	Assumed same as Desktop
Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	1,278.96	6	\$16.35	100%	at stock turnover	\$0.00	34	36	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	859.45	6	\$6.45	100%	at stock turnover	\$0.00	261	269	Assumed same as Desktop
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	New	5,888.68	6	\$44.18	100%	at stock turnover	\$0.00	598	591	ENERGY STAR Calculator
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	New	203.99	4	\$795.00	10%	50%	\$0.29	118	126	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	New	463.74	6	\$11.49	100%	at stock turnover	\$0.00	47	47	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	New	1,024.26	6	\$69.25	100%	at stock turnover	\$0.01	42	41	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	New	606.09	5	\$1,200.00	10%	25%	\$0.15	132	141	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	New	598.86	6	\$4.49	100%	at stock turnover	\$0.00	108	108	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	New	1,278.96	6	\$16.35	100%	at stock turnover	\$0.00	25	25	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	New	859.45	6	\$6.45	100%	at stock turnover	\$0.00	200	196	Assumed same as Desktop
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	Existing	911.00	9	\$92.62	90%	at stock turnover	\$0.01	102	94	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	Existing	309.39	8	\$2,544.00	0%	25%	\$0.63	24	24	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	Existing	1,230.00	9	\$96.00	0%	25%	\$0.01	52	52	PacifiCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	Existing	287.18	15	\$17,376.00	0%	25%	\$4.39	102	113	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	Existing	591.98	15	\$5,562.00	0%	25%	\$0.70	213	232	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	Existing	551.25	4	\$1,047.00	0%	25%	\$0.15	15	15	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	Existing	2,101.38	10	\$550.59	90%	at stock turnover	\$0.02	536	468	EIA 2011
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	New	911.00	9	\$101.88	99%	at stock turnover	\$0.01	88	80	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	New	606.00	8	\$2,544.00	0%	25%	\$0.33	33	33	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	New	1,230.00	9	\$96.00	0%	25%	\$0.01	38	38	PacificCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	New	281.29	15	\$17,376.00	0%	25%	\$4.48	74	76	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	New	578.02	15	\$5,562.00	0%	25%	\$0.71	152	157	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	New	550.94	4	\$1,047.00	0%	25%	\$0.15	11	11	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	New	2,101.38	10	\$605.65	99%	at stock turnover	\$0.02	575	529	EIA 2011
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	0.00	15	\$11,700.00	45%	85%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

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Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	Existing	4,605.37	15	\$9,525.00	20%	65%	\$0.02	552	706	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	2,211.18	18	\$69,630.00	15%	50%	\$2.01	195	306	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	5,255.56	50	\$75,000.00	15%	25%	\$0.25	134	207	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	2,885.73	20	\$10,500.00	15%	50%	\$0.03	263	344	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	436.78	45	\$23,130.00	15%	35%	\$0.05	23	30	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	5,339.65	3	\$18,300.00	10%	75%	\$0.03	898	1,182	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	3,885.52	3	\$9,525.00	4%	28%	\$0.02	241	407	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	Existing	1,387.59	15	\$6,600.00	15%	75%	\$0.33	211	283	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	Existing	13,324.29	18	\$5,100.00	15%	35%	\$0.03	703	907	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	Existing	54,226.60	20	\$35,821.19	100%	at stock turnover	\$0.05	342	346	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	Existing	39,244.40	15	\$2,820.00	13%	50%	\$0.01	4,110	4,899	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	13,634.62	20	\$120,000.00	10%	25%	\$0.05	451	452	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	New	2,761.77	3	\$28,800.00	10%	75%	\$0.06	394	395	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	85%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	New	2,486.00	15	\$9,525.00	20%	65%	\$0.02	247	247	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	2,695.61	50	\$75,000.00	15%	25%	\$0.44	59	59	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	802.10	45	\$37,881.00	15%	50%	\$0.11	62	62	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	1,569.04	20	\$10,500.00	15%	50%	\$0.04	121	121	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	17.87	45	\$23,130.00	15%	50%	\$0.41	1	1	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	New	2,017.35	3	\$9,525.00	4%	28%	\$0.03	139	140	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	New	711.72	15	\$3,900.00	15%	75%	\$0.36	94	94	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	New	6,926.14	18	\$5,100.00	15%	35%	\$0.05	305	306	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	New	40,756.20	20	\$28,045.84	100%	at stock turnover	\$0.05	173	175	BEST Simulation
Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	New	21,510.24	15	\$2,820.00	19%	50%	\$0.01	1,455	1,459	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	9,323.52	5	\$5,400.00	3%	75%	\$0.04	297	328	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	806.90	7	\$1,398.00	1%	4%	\$0.08	1	1	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	Existing	59,091.67	20	\$1,116.00	0%	1%	\$0.00	22	22	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	Existing	10,396.29	5	\$1,200.00	1%	10%	\$0.01	44	45	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	Existing	27,042.07	5	\$993.00	25%	65%	\$0.00	187	190	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	Existing	3,489.38	15	\$534.00	15%	50%	\$0.01	56	57	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	Existing	95.35	15	\$9.00	15%	75%	\$0.01	3	3	DEER
Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	Existing	6,502.52	15	\$2,421.00	16%	75%	\$0.03	175	182	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	Existing	22,476.14	20	\$12,501.00	1%	30%	\$0.04	294	309	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	Existing	2,250.57	13	\$72.32	22%	at stock turnover	\$0.00	71	68	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	9,732.56	5	\$5,400.00	3%	75%	\$0.04	314	338	AEG study for PN&L
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	29,464.75	20	\$120,000.00	10%	25%	\$0.05	132	133	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	9,227.59	5	\$5,400.00	6%	75%	\$0.04	190	192	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	774.65	7	\$1,398.00	1%	2%	\$0.07	0	0	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	New	58,927.02	20	\$1,116.00	0%	1%	\$0.00	14	14	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	New	10,515.14	5	\$1,200.00	0%	75%	\$0.01	236	238	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	New	26,970.87	5	\$993.00	25%	65%	\$0.00	122	123	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	New	3,527.84	15	\$534.00	15%	50%	\$0.01	37	37	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	New	96.84	15	\$9.00	15%	75%	\$0.01	2	2	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	New	6,337.94	15	\$2,421.00	1%	75%	\$0.03	140	141	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	New	21,822.69	20	\$12,501.00	1%	30%	\$0.04	189	190	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	New	2,250.57	13	\$72.32	22%	at stock turnover	\$0.00	70	68	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	8,875.84	5	\$5,400.00	6%	75%	\$0.04	183	184	AEG study for PN&L
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	Existing	95,354.54	23	\$120,899.26	8%	at stock turnover	\$0.11	2,236	2,140	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	Existing	54,051.78	23	\$19,950.02	17%	at stock turnover	\$0.03	3,995	4,031	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	45,062.10	10	\$815.00	15%	75%	\$0.00	5,457	6,075	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	4,929.90	15	\$2,635.00	15%	75%	\$0.04	564	690	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	Existing	1,874.07	15	\$3,590.00	15%	75%	\$0.11	205	271	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	8,761.67	15	\$13,000.00	45%	85%	\$0.22	2,736	3,412	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	Existing	39,249.53	12	\$22,500.00	15%	30%	\$0.04	5,580	7,126	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	6,814.27	10	\$7,500.00	15%	35%	\$0.04	1,284	1,516	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	63,078.61	15	\$3,570.00	15%	25%	\$0.00	39	45	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	11,673.39	15	\$15,875.00	20%	65%	\$0.04	5,030	5,845	BEST Simulation
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	Existing	84,097.23	23	\$99,497.34	7%	at stock turnover	\$0.04	873	875	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	1,586.06	18	\$95.00	15%	50%	\$0.00	550	655	BEST Simulation
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	Existing	45,512.12	10	\$29,480.00	18%	75%	\$0.04	10,827	14,016	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	19,512.98	15	\$260.00	15%	75%	\$0.01	11,473	13,027	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	12,228.33	50	\$125,000.00	15%	25%	\$0.41	1,084	1,542	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	1,701.68	45	\$63,135.00	15%	35%	\$0.16	309	379	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	4,528.84	20	\$410.00	15%	35%	\$0.01	869	1,008	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	10,501.57	45	\$34,640.00	15%	35%	\$0.12	1,915	2,337	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	6,752.23	20	\$17,500.00	15%	50%	\$0.07	2,165	2,630	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	-3,754.82	45	\$38,550.00	15%	35%	\$0.15	-682	-836	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	Existing	36,654.70	15	\$19,028.50	1%	at stock turnover	\$0.04	218	202	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	12,504.31	3	\$30,500.00	10%	75%	\$0.06	7,379	9,044	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	Existing	99,932.16	23	\$404,080.80	44%	at stock turnover	\$0.38	16,365	13,701	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$129,625.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	9,058.29	3	\$15,875.00	3%	14%	\$0.05	905	1,382	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	Existing	81,476.08	23	\$30,185.25	19%	at stock turnover	\$0.03	10,443	10,404	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	23,540.10	10	\$815.00	15%	75%	\$0.00	2,713	3,241	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	30,804.97	4	\$815.00	15%	75%	\$0.00	3,505	4,290	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	2,862.25	15	\$2,635.00	15%	75%	\$0.05	298	422	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	Existing	1,699.03	15	\$12,110.00	15%	75%	\$0.39	171	255	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	41,542.36	20	\$200,000.00	10%	30%	\$0.09	5,543	5,900	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	New	46,669.53	23	\$17,108.94	21%	at stock turnover	\$0.03	6,289	6,357	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	35,545.66	10	\$815.00	15%	75%	\$0.00	2,894	2,977	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	5,005.59	15	\$2,635.00	15%	75%	\$0.03	405	417	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$3,590.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	New	8,477.33	3	\$48,000.00	10%	75%	\$0.11	3,663	3,899	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	1,902.31	15	\$13,000.00	45%	85%	\$1.23	442	470	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	New	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	New	27,771.29	12	\$22,500.00	15%	30%	\$0.05	2,798	2,977	Environment Design Guide, November 2007 (PDF)
Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	4,824.47	10	\$7,500.00	15%	50%	\$0.05	1,133	1,206	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	51,312.39	15	\$3,570.00	15%	25%	\$0.00	21	22	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	New	8,293.68	15	\$15,875.00	20%	65%	\$0.04	2,509	2,670	BEST Simulation
Large Office	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Large Office bldg.	New	23,330.44	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	71,745.86	23	\$89,655.13	7%	at stock turnover	\$0.05	931	934	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	2,258.64	18	\$95.00	15%	35%	\$0.00	305	324	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	New	31,855.82	10	\$29,480.00	18%	75%	\$0.06	2,007	2,130	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	15,786.42	15	\$260.00	15%	75%	\$0.01	6,383	6,792	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	8,277.31	50	\$125,000.00	15%	25%	\$0.55	549	585	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	-108.23	45	\$63,135.00	15%	50%	\$0.27	-25	-27	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	7,166.10	45	\$34,640.00	15%	50%	\$0.13	1,669	1,777	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	5,113.12	20	\$17,500.00	15%	50%	\$0.08	1,200	1,277	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	-74.49	45	\$38,550.00	15%	50%	\$1.05	-17	-18	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	New	32,280.83	15	\$18,058.39	1%	at stock turnover	\$0.04	175	163	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	New	84,826.49	23	\$364,109.42	49%	at stock turnover	\$0.40	17,745	14,647	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	New	0.00	15	\$129,625.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	6,140.08	3	\$15,875.00	3%	14%	\$0.06	587	625	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	New	71,230.62	23	\$25,886.57	21%	at stock turnover	\$0.03	11,806	11,772	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	17,331.23	10	\$815.00	15%	75%	\$0.00	1,345	1,444	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	New	22,767.17	4	\$815.00	15%	75%	\$0.00	1,763	1,893	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	3,258.43	15	\$2,635.00	15%	75%	\$0.04	251	269	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$12,110.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	263.48	15	\$15,875.00	20%	65%	\$0.04	273	441	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	780.75	5	\$960.00	15%	25%	\$0.06	178	362	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	69.89	10	\$1,095.00	33%	60%	\$0.81	43	90	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	Existing	4,543.85	10	\$1,715.00	15%	30%	\$0.02	1,619	3,087	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	408.84	15	-\$18.04	100%	at stock turnover	\$0.01	39	135	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	521.26	15	\$142.93	100%	at stock turnover	\$0.01	10,612	10,667	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	96.18	15	\$88.16	100%	at stock turnover	\$0.03	4,533	4,398	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	20.87	15	\$2.04	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	257.94	3	\$30,500.00	10%	75%	\$0.06	380	624	6th Plan
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	88.56	6	\$2.10	100%	at stock turnover	\$0.01	0	8	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	72.08	15	\$38.26	100%	at stock turnover	\$0.03	2,223	1,561	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	226.23	3	\$15,875.00	3%	14%	\$0.05	57	134	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	1,233.63	20	\$200,000.00	10%	30%	\$0.09	318	473	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	210.25	3	\$48,000.00	10%	75%	\$0.11	175	261	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	223.29	15	\$15,875.00	20%	65%	\$0.04	130	193	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	638.81	5	\$960.00	15%	25%	\$0.07	82	122	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	68.33	10	\$1,095.00	44%	60%	\$0.70	14	21	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	New	3,850.20	10	\$1,715.00	15%	30%	\$0.02	750	1,117	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	408.84	15	-\$18.04	100%	at stock turnover	\$0.01	27	88	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	521.26	15	\$142.93	100%	at stock turnover	\$0.01	7,463	7,475	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	96.18	15	\$88.16	100%	at stock turnover	\$0.03	3,457	3,381	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	20.87	15	\$2.04	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	88.56	6	\$2.10	100%	at stock turnover	\$0.01	0	8	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	72.08	15	\$38.26	100%	at stock turnover	\$0.02	1,605	919	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	182.76	3	\$15,875.00	3%	14%	\$0.06	34	50	BEST Simulation
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	4,887.95	15	\$25.06	43%	at stock turnover	\$0.00	290	284	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	498.16	10	\$101.54	76%	at stock turnover	\$0.02	392	340	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	844.54	18	\$112.98	43%	at stock turnover	\$0.01	39	38	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	896.93	10	\$197.42	66%	at stock turnover	\$0.02	411	357	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	4,887.95	15	\$30.08	52%	at stock turnover	\$0.00	297	290	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	498.16	10	\$121.84	92%	at stock turnover	\$0.02	330	299	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	844.54	18	\$135.58	52%	at stock turnover	\$0.01	34	34	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	896.93	10	\$236.91	79%	at stock turnover	\$0.02	346	314	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	Existing	2,890.93	23	\$136,786.77	8%	at stock turnover	\$0.11	67	64	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	-6,439.06	15	\$13,000.00	45%	85%	\$0.23	-899	-949	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	6,211.46	10	\$7,500.00	15%	35%	\$0.04	521	523	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	81,925.63	15	\$3,570.00	15%	25%	\$0.00	2,812	2,812	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	10,457.43	15	\$15,875.00	20%	65%	\$0.04	1,993	1,981	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	Existing	25,426.33	23	\$56,472.37	7%	at stock turnover	\$0.04	264	265	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	-164.89	18	\$95.00	15%	50%	\$0.00	-24	-24	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	-16,039.39	15	\$260.00	15%	75%	\$0.01	-4,000	-4,052	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	28,819.37	45	\$63,135.00	15%	35%	\$0.16	2,367	2,427	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	-373.74	20	\$410.00	15%	35%	\$0.01	-32	-31	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	10,262.16	45	\$34,640.00	15%	35%	\$0.12	854	864	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	8,053.35	20	\$17,500.00	15%	50%	\$0.07	1,180	1,187	BEST Simulation
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	23,466.45	45	\$38,550.00	15%	35%	\$0.15	1,946	1,976	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	11,936.50	3	\$30,500.00	10%	75%	\$0.06	3,148	3,267	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	Existing	0.00	14	\$216,680.00	3%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	8,647.35	3	\$15,875.00	3%	14%	\$0.05	386	418	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	55,046.43	20	\$200,000.00	10%	30%	\$0.09	2,464	2,472	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	New	12,315.43	23	\$127,088.93	8%	at stock turnover	\$0.11	330	310	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	New	11,003.39	3	\$48,000.00	10%	75%	\$0.11	1,594	1,600	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	-2,072.75	15	\$13,000.00	45%	85%	\$1.23	-161	-162	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	5,986.70	10	\$7,500.00	15%	50%	\$0.05	469	471	AEG research & analysis
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	81,812.17	15	\$3,570.00	15%	25%	\$0.00	1,477	1,477	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	New	10,118.41	15	\$15,875.00	20%	65%	\$0.04	1,021	1,024	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	23,876.41	23	\$56,083.00	7%	at stock turnover	\$0.05	284	285	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	1,963.55	18	\$95.00	15%	35%	\$0.00	88	88	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	-13,977.70	15	\$260.00	15%	75%	\$0.01	-1,877	-1,883	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	16,970.49	45	\$63,135.00	15%	50%	\$0.27	1,326	1,330	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	9,490.33	45	\$34,640.00	15%	50%	\$0.13	742	744	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	7,732.29	20	\$17,500.00	15%	50%	\$0.08	606	608	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	2,613.41	45	\$38,550.00	15%	50%	\$1.05	204	204	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	New	0.00	14	\$216,680.00	6%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	8,130.12	3	\$15,875.00	3%	14%	\$0.06	261	262	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	2,077.21	15	\$15,875.00	20%	65%	\$0.04	2,100	3,480	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	351.04	15	-\$15.49	100%	at stock turnover	\$0.01	80	275	EIA 2011
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	447.58	15	\$122.72	100%	at stock turnover	\$0.01	21,609	21,721	EIA 2011
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	12,704.35	5	\$36,900.00	5%	15%	\$0.15	939	1,995	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	Existing	20,275.70	5	\$2,135.00	15%	50%	\$0.01	5,761	10,588	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	12,358.70	12	\$20,000.00	3%	25%	\$0.08	5,968	12,650	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	Existing	1,870.70	16	\$1,345.00	1%	3%	\$0.04	84	200	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	13,388.43	10	\$5,565.00	7%	45%	\$0.02	8,219	16,305	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	Existing	0.00	25	\$20,500.00	15%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$6,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	Existing	1,647.04	5	\$5,500.00	10%	25%	\$0.13	124	452	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	136.77	15	\$125.36	100%	at stock turnover	\$0.03	85,175	82,651	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	29.68	15	\$2.91	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	1,974.15	3	\$30,500.00	10%	75%	\$0.06	2,800	4,777	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	133.45	6	\$3.17	100%	at stock turnover	\$0.01	0	74	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	108.61	15	\$57.65	100%	at stock turnover	\$0.03	20,032	14,069	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,716.00	3	\$15,875.00	3%	14%	\$0.05	412	1,093	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	9,871.77	20	\$200,000.00	10%	30%	\$0.09	2,582	3,791	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	1,623.18	3	\$48,000.00	10%	75%	\$0.11	1,369	2,010	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	1,786.83	15	\$15,875.00	20%	65%	\$0.04	1,053	1,546	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	351.04	15	-\$15.49	100%	at stock turnover	\$0.01	56	179	EIA 2011
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	447.58	15	\$122.72	100%	at stock turnover	\$0.01	15,197	15,221	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	10,780.64	5	\$36,900.00	5%	15%	\$0.16	478	687	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	New	17,104.28	5	\$2,135.00	15%	50%	\$0.01	2,694	3,871	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	10,223.49	12	\$20,000.00	4%	25%	\$0.09	2,733	4,013	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	New	1,609.01	16	\$1,345.00	1%	3%	\$0.04	42	62	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	11,179.72	10	\$5,565.00	22%	45%	\$0.03	1,546	2,271	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	New	0.00	25	\$20,500.00	18%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Large Office bldg.	New	0.00	8	\$6,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	New	1,109.14	5	\$5,500.00	10%	25%	\$0.19	62	104	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	136.77	15	\$125.36	100%	at stock turnover	\$0.03	64,962	63,524	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	29.68	15	\$2.91	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	133.45	6	\$3.17	100%	at stock turnover	\$0.01	0	68	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	108.61	15	\$57.65	100%	at stock turnover	\$0.02	14,466	8,281	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,421.59	3	\$15,875.00	3%	14%	\$0.06	266	390	BEST Simulation
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	107.42	7	\$1,395.00	1%	4%	\$0.08	5	5	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	Existing	1.57	7	\$30.00	1%	3%	\$1.49	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	Existing	76.81	10	\$195.00	1%	3%	\$0.20	2	2	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	Existing	2,084.86	15	\$12,385.00	15%	75%	\$0.46	1,390	1,390	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,501.30	3	\$15,875.00	3%	14%	\$0.05	443	426	BEST Simulation
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	115.09	7	\$1,395.00	1%	2%	\$0.08	1	1	Developed from RTF
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculatorBulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	New	2,084.86	15	\$12,385.00	15%	75%	\$0.46	816	816	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Large Office bldg.	New	161.46	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,457.27	3	\$15,875.00	3%	14%	\$0.06	311	304	BEST Simulation
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$500,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	33,914.31	6	\$254.47	100%	at stock turnover	\$0.00	14,355	15,155	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	Existing	1,069.98	4	\$1,325.00	10%	50%	\$0.09	3,156	3,598	Developed from RTF
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,676.97	6	\$165.50	100%	at stock turnover	\$0.00	2,826	2,984	ENERGY STAR Calculator
Large Office	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	5,898.96	6	\$398.84	100%	at stock turnover	\$0.01	1,000	1,055	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	3,158.63	5	\$2,000.00	10%	25%	\$0.05	3,522	3,985	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	574.83	6	\$1.73	40%	at stock turnover	\$0.00	183	194	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,138.19	6	\$78.48	100%	at stock turnover	\$0.00	597	622	ENERGY STAR Calculator
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	New	0.00	20	\$150,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	33,914.31	6	\$254.47	100%	at stock turnover	\$0.00	10,104	10,003	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	New	1,105.94	4	\$1,325.00	10%	50%	\$0.09	1,727	1,848	Developed from RTF
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	6,676.97	6	\$165.50	100%	at stock turnover	\$0.00	1,989	1,969	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	3,279.72	5	\$2,000.00	10%	25%	\$0.05	1,922	2,056	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	574.83	6	\$1.90	44%	at stock turnover	\$0.00	134	134	Assumed same as Desktop
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	6,138.19	6	\$78.48	100%	at stock turnover	\$0.00	354	350	ENERGY STAR Calculator
Large Office	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	4,124.83	6	\$30.95	100%	at stock turnover	\$0.00	2,815	2,766	Assumed same as Desktop
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	Existing	428.13	9	\$21.62	45%	at stock turnover	\$0.00	80	73	EIA 2011
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	Existing	1,230.00	9	\$95.00	0%	10%	\$0.01	21	21	PacifiCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$33,485.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$5,565.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$12,680.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	Existing	1,975.11	10	\$257.04	45%	at stock turnover	\$0.01	913	796	EIA 2011
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	New	0.00	5	\$1,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	New	428.13	9	\$25.94	54%	at stock turnover	\$0.00	197	178	EIA 2011
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	New	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	New	1,230.00	9	\$95.00	0%	10%	\$0.01	13	13	PacifiCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	New	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	New	0.00	15	\$33,485.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	New	0.00	15	\$5,565.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	New	0.00	4	\$12,680.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	New	1,975.11	10	\$308.44	54%	at stock turnover	\$0.01	859	790	EIA 2011
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	357.52	15	\$13,000.00	45%	85%	\$0.22	123	155	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	5,675.73	15	\$15,875.00	20%	65%	\$0.04	2,594	3,169	BEST Simulation
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	3,162.46	18	\$95.00	15%	50%	\$0.00	1,218	1,474	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	-1,717.86	15	\$260.00	15%	75%	\$0.01	-1,132	-1,279	BEST Simulation
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	6,577.62	50	\$125,000.00	15%	25%	\$0.41	646	921	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	-72.08	45	\$63,135.00	15%	35%	\$0.16	-14	-18	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	29.46	20	\$410.00	15%	35%	\$0.01	6	7	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	3,598.58	20	\$17,500.00	15%	50%	\$0.07	1,266	1,563	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	544.62	45	\$38,550.00	15%	35%	\$0.15	109	135	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	6,688.28	3	\$30,500.00	10%	75%	\$0.06	4,347	5,395	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	4,845.10	3	\$15,875.00	3%	14%	\$0.05	533	810	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	Existing	1,736.55	15	\$11,000.00	15%	75%	\$0.44	1,022	1,293	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	Existing	16,777.12	18	\$8,500.00	15%	35%	\$0.04	3,452	4,164	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	Existing	47,904.00	20	\$63,954.55	100%	at stock turnover	\$0.10	1,741	1,760	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	Existing	49,026.38	15	\$8,275.00	13%	50%	\$0.01	19,805	22,305	BEST Simulation
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	23,602.83	20	\$200,000.00	10%	30%	\$0.09	3,044	3,060	AEG research & analysis
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	New	4,834.76	3	\$48,000.00	10%	75%	\$0.11	2,021	2,031	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	314.90	15	\$13,000.00	45%	85%	\$1.23	71	71	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	0.00	10	\$7,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	New	4,382.07	15	\$15,875.00	20%	65%	\$0.04	1,275	1,281	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	2,934.16	18	\$95.00	15%	35%	\$0.00	381	383	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	-1,431.50	15	\$260.00	15%	75%	\$0.01	-557	-560	BEST Simulation
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	4,719.42	50	\$125,000.00	15%	25%	\$0.55	303	305	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	171.41	45	\$63,135.00	15%	50%	\$0.27	39	39	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	2,716.13	20	\$17,500.00	15%	50%	\$0.08	613	616	BEST Simulation
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	31.16	45	\$38,550.00	15%	50%	\$1.05	7	7	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	3,524.64	3	\$15,875.00	3%	14%	\$0.06	326	328	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	New	1,288.74	15	\$6,500.00	15%	75%	\$0.33	497	500	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	New	12,618.67	18	\$8,500.00	15%	35%	\$0.05	1,630	1,638	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	New	43,313.42	20	\$63,335.91	100%	at stock turnover	\$0.11	1,748	1,770	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	New	37,915.93	15	\$8,275.00	19%	50%	\$0.02	7,517	7,556	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	3,598.48	5	\$9,000.00	3%	75%	\$0.16	987	1,100	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	1,080.70	7	\$1,395.00	1%	4%	\$0.08	12	13	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	Existing	23,094.74	20	\$1,115.00	1%	7%	\$0.00	540	546	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,013.61	5	\$2,000.00	1%	10%	\$0.04	146	152	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	Existing	10,384.13	5	\$660.00	25%	65%	\$0.00	617	637	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	Existing	1,340.49	15	\$505.00	15%	25%	\$0.03	53	55	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	Existing	208.48	15	\$15.00	15%	75%	\$0.01	50	51	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	2,417.49	15	\$3,125.00	16%	75%	\$0.09	555	593	BEST Simulation
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	Existing	8,869.79	20	\$12,500.00	1%	30%	\$0.10	1,009	1,054	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	Existing	878.50	13	\$60.01	68%	at stock turnover	\$0.01	240	229	BEST Simulation
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	3,755.99	5	\$9,000.00	3%	75%	\$0.16	1,045	1,133	AEG study for PN&L
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	12,093.37	20	\$200,000.00	10%	30%	\$0.09	504	508	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	3,527.57	5	\$9,000.00	6%	75%	\$0.16	507	511	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	1,019.31	7	\$1,395.00	1%	2%	\$0.08	2	2	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	New	23,030.91	20	\$1,115.00	1%	7%	\$0.00	312	314	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	New	4,055.44	5	\$2,000.00	0%	75%	\$0.04	636	640	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	New	10,350.20	5	\$660.00	25%	65%	\$0.00	326	328	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	New	1,354.31	15	\$505.00	15%	25%	\$0.03	28	28	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	New	208.74	15	\$15.00	15%	75%	\$0.01	26	26	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	New	2,276.57	15	\$3,125.00	1%	75%	\$0.09	349	351	BEST Simulation
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	New	8,340.47	20	\$12,500.00	1%	30%	\$0.10	503	507	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	New	878.50	13	\$60.01	68%	at stock turnover	\$0.01	191	185	BEST Simulation
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	3,393.29	5	\$9,000.00	6%	75%	\$0.16	487	490	AEG study for PN&L
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Large Retail bldg.	Existing	200,008.34	23	\$175,613.02	2%	at stock turnover	\$0.28	287	247	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	Existing	109,848.72	23	\$29,679.85	12%	at stock turnover	\$0.02	1,640	1,655	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	82,502.87	10	\$810.00	15%	75%	\$0.00	1,202	1,329	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	9,224.29	15	\$2,190.00	15%	75%	\$0.02	131	152	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	Existing	3,061.32	15	\$4,010.00	15%	75%	\$0.08	41	52	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	Existing	78,466.36	12	\$45,000.00	15%	30%	\$0.04	1,963	2,543	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	13,624.62	10	\$15,000.00	15%	35%	\$0.04	452	536	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	131,724.70	15	\$3,570.00	15%	25%	\$0.00	28	33	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	23,298.20	15	\$31,750.00	20%	65%	\$0.03	1,765	2,061	BEST Simulation
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	Existing	48,943.22	15	\$113,499.23	3%	at stock turnover	\$0.19	200	188	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	Existing	176,420.47	23	\$144,525.49	2%	at stock turnover	\$0.05	252	252	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	3,179.57	18	\$110.00	15%	25%	\$0.00	55	67	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	Existing	102,134.91	10	\$32,910.00	18%	75%	\$0.02	4,374	5,340	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	41,463.66	15	\$260.00	15%	75%	\$0.03	1,724	2,119	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	26,513.41	50	\$250,000.00	15%	25%	\$0.49	428	582	6th Plan
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	-1,322.38	45	\$126,270.00	15%	35%	\$0.09	-44	-52	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	12,632.32	20	\$820.00	15%	35%	\$0.01	438	497	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	22,550.87	45	\$69,280.00	15%	35%	\$0.10	742	886	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	14,496.60	20	\$35,000.00	15%	50%	\$0.07	839	997	BEST Simulation
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	-8,060.03	45	\$77,100.00	15%	35%	\$0.11	-264	-317	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	PTAC - EER 12.2	per 100,000 sqft Large Retail bldg.	Existing	76,895.21	15	\$39,918.50	1%	at stock turnover	\$0.04	134	124	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	26,951.67	3	\$61,000.00	10%	75%	\$0.06	2,875	3,443	6th Plan
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$144,720.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	19,470.28	3	\$31,750.00	0%	3%	\$0.04	96	140	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	47,450.71	10	\$810.00	15%	75%	\$0.00	164	196	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	58,822.48	4	\$810.00	15%	75%	\$0.00	201	245	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	6,687.77	15	\$2,190.00	15%	75%	\$0.02	22	28	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	Existing	2,723.18	15	\$10,080.00	15%	75%	\$0.21	8	12	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	94,929.71	20	\$400,000.00	10%	30%	\$0.08	2,265	2,414	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Large Retail bldg.	New	188,747.38	23	\$151,538.61	3%	at stock turnover	\$0.29	347	295	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	New	92,908.94	23	\$26,304.70	16%	at stock turnover	\$0.02	1,818	1,838	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	65,438.08	10	\$810.00	15%	75%	\$0.00	638	661	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	8,045.54	15	\$2,190.00	15%	75%	\$0.02	78	81	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$4,010.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	New	19,459.64	3	\$96,000.00	10%	75%	\$0.10	1,504	1,603	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	New	58,947.77	12	\$45,000.00	15%	30%	\$0.05	1,056	1,126	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	10,469.58	10	\$15,000.00	15%	50%	\$0.04	438	467	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	107,433.65	15	\$3,570.00	15%	25%	\$0.00	16	16	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	New	17,692.23	15	\$31,750.00	20%	65%	\$0.04	952	1,015	BEST Simulation
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	New	48,943.22	15	\$158,898.92	3%	at stock turnover	\$0.26	210	198	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	New	166,511.30	23	\$124,712.81	2%	at stock turnover	\$0.05	305	306	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	4,585.13	18	\$100.00	15%	25%	\$0.00	55	59	BEST Simulation
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	New	77,022.06	10	\$32,910.00	18%	75%	\$0.03	850	905	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	35,983.48	15	\$260.00	15%	75%	\$0.01	2,599	2,770	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	18,999.16	50	\$250,000.00	15%	25%	\$0.64	226	240	6th Plan
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-3,154.46	45	\$126,270.00	15%	50%	\$0.10	-131	-140	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	16,407.53	45	\$69,280.00	15%	50%	\$0.11	683	728	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	10,923.60	20	\$35,000.00	15%	50%	\$0.08	456	486	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	-170.98	45	\$77,100.00	15%	50%	\$0.84	-7	-8	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$144,720.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	14,057.93	3	\$31,750.00	0%	3%	\$0.05	66	70	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Large Retail bldg.	New	139,525.04	23	\$39,800.16	4%	at stock turnover	\$0.02	696	694	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	34,050.72	10	\$810.00	15%	75%	\$0.00	80	86	DEER
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	42,310.14	4	\$810.00	15%	75%	\$0.00	99	106	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	5,376.77	15	\$2,190.00	15%	75%	\$0.02	13	13	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$10,080.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	1,325.94	15	\$31,750.00	20%	65%	\$0.03	226	373	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	3,892.28	5	\$6,390.00	15%	25%	\$0.09	144	307	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	448.67	10	\$4,380.00	33%	60%	\$0.50	45	97	AEG research & analysis
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	Existing	22,854.90	10	\$6,850.00	15%	30%	\$0.02	1,345	2,630	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	260.82	15	-\$10.07	100%	at stock turnover	\$0.01	33	105	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	332.55	15	\$79.78	100%	at stock turnover	\$0.01	8,859	8,831	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	54.44	15	\$43.66	100%	at stock turnover	\$0.03	3,282	3,185	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	11.81	15	\$1.01	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	1,313.40	3	\$61,000.00	10%	75%	\$0.05	320	534	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	57.48	6	\$1.19	100%	at stock turnover	\$0.01	0	7	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	46.78	15	\$21.73	100%	at stock turnover	\$0.02	1,891	1,325	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	1,138.57	3	\$31,750.00	0%	3%	\$0.04	13	32	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	6,160.31	20	\$400,000.00	10%	30%	\$0.08	237	354	AEG research & analysis
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	1,052.74	3	\$96,000.00	10%	75%	\$0.10	131	196	6th Plan
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	1,115.04	15	\$31,750.00	20%	65%	\$0.04	97	144	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	3,186.66	5	\$6,390.00	15%	25%	\$0.09	61	91	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	385.74	10	\$4,380.00	44%	60%	\$0.49	12	18	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	New	19,227.50	10	\$6,850.00	15%	30%	\$0.02	559	834	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	260.82	15	-\$10.07	100%	at stock turnover	\$0.01	22	73	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	332.55	15	\$79.78	100%	at stock turnover	\$0.01	5,997	6,010	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	54.44	15	\$43.66	100%	at stock turnover	\$0.02	2,219	2,169	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	11.81	15	\$1.01	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	57.48	6	\$1.19	100%	at stock turnover	\$0.01	0	5	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	46.78	15	\$21.73	100%	at stock turnover	\$0.02	1,212	693	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	920.82	3	\$31,750.00	0%	3%	\$0.05	7	10	BEST Simulation
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	26,395.31	15	\$124.95	40%	at stock turnover	\$0.00	243	237	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,690.12	10	\$324.39	45%	at stock turnover	\$0.01	210	183	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	4,560.57	18	\$563.21	40%	at stock turnover	\$0.01	32	32	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	4,843.47	10	\$789.88	49%	at stock turnover	\$0.01	276	240	Developed from RTF "ComCookingConvectionOven" v2.0
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	26,395.31	15	\$187.42	59%	at stock turnover	\$0.00	275	269	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,690.12	10	\$486.58	68%	at stock turnover	\$0.01	197	178	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	4,560.57	18	\$844.82	59%	at stock turnover	\$0.01	31	31	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	4,843.47	10	\$1,184.83	73%	at stock turnover	\$0.02	258	233	Developed from RTF "ComCookingConvectionOven" v2.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Large Retail bldg.	Existing	10,412.67	23	\$726,114.62	2%	at stock turnover	\$0.28	13	11	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	16,010.89	10	\$15,000.00	15%	35%	\$0.04	167	170	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	213,727.26	15	\$3,570.00	15%	25%	\$0.00	878	878	Developed from RTF
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	26,954.35	15	\$31,750.00	20%	65%	\$0.03	638	643	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	4,328.30	18	\$110.00	15%	25%	\$0.00	23	23	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	-41,663.07	15	\$260.00	15%	75%	\$0.03	-524	-537	BEST Simulation
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	105,812.21	45	\$126,270.00	15%	35%	\$0.09	1,094	1,123	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	-2,874.47	20	\$820.00	15%	35%	\$0.01	-30	-30	BEST Simulation
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	25,985.49	45	\$69,280.00	15%	35%	\$0.10	264	276	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	20,758.82	20	\$35,000.00	15%	50%	\$0.07	378	385	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	59,423.44	45	\$77,100.00	15%	35%	\$0.11	601	631	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	30,700.51	3	\$61,000.00	10%	75%	\$0.06	1,000	1,059	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	Existing	0.00	14	\$184,370.00	3%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	22,178.73	3	\$31,750.00	0%	3%	\$0.04	33	37	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	138,575.22	20	\$400,000.00	10%	30%	\$0.08	717	718	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Large Retail bldg.	New	11,803.24	23	\$727,520.98	3%	at stock turnover	\$0.29	17	14	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	New	27,110.72	3	\$96,000.00	10%	75%	\$0.10	454	454	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	15,071.12	10	\$15,000.00	15%	50%	\$0.04	137	137	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	213,727.26	15	\$3,570.00	15%	25%	\$0.00	410	410	Developed from RTF
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	New	25,472.52	15	\$31,750.00	20%	65%	\$0.04	297	297	BEST Simulation
Large Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	New	20,130.00	23	\$120,231.97	2%	at stock turnover	\$0.05	30	30	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	6,331.94	18	\$100.00	15%	25%	\$0.00	16	16	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	-35,187.83	15	\$260.00	15%	75%	\$0.01	-546	-547	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	95,563.86	45	\$126,270.00	15%	50%	\$0.10	864	865	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	22,861.55	45	\$69,280.00	15%	50%	\$0.11	206	206	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	19,465.48	20	\$35,000.00	15%	50%	\$0.08	176	177	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	6,439.22	45	\$77,100.00	15%	50%	\$0.84	58	58	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	New	0.00	14	\$184,370.00	6%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	19,585.36	3	\$31,750.00	0%	3%	\$0.05	20	20	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	9,252.46	15	\$31,750.00	20%	65%	\$0.03	1,567	2,602	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	699.46	15	-\$27.01	100%	at stock turnover	\$0.01	110	354	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	891.81	15	\$213.96	100%	at stock turnover	\$0.01	29,768	29,675	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	45,787.70	5	\$95,330.00	5%	15%	\$0.10	561	1,213	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	Existing	72,825.61	5	\$4,570.00	15%	50%	\$0.00	3,432	6,421	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	55,048.99	12	\$40,000.00	3%	25%	\$0.04	4,453	9,459	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	Existing	8,332.63	16	\$2,880.00	1%	3%	\$0.02	63	149	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	59,637.89	10	\$11,930.00	7%	45%	\$0.01	6,133	12,192	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	Existing	0.00	25	\$41,000.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$13,310.00	7%	15%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	Existing	7,417.97	5	\$11,000.00	10%	25%	\$0.06	97	339	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	201.42	15	\$161.54	100%	at stock turnover	\$0.03	50,508	49,011	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	43.71	15	\$3.75	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	8,807.71	3	\$61,000.00	10%	75%	\$0.05	2,093	3,578	6th Plan
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	200.88	6	\$4.17	100%	at stock turnover	\$0.01	0	55	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	163.49	15	\$75.93	100%	at stock turnover	\$0.02	15,172	10,631	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	7,635.23	3	\$31,750.00	0%	3%	\$0.04	84	222	BEST Simulation
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	42,440.38	20	\$400,000.00	10%	30%	\$0.08	1,641	2,429	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	7,273.52	3	\$96,000.00	10%	75%	\$0.10	911	1,347	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	7,974.87	15	\$31,750.00	20%	65%	\$0.04	697	1,031	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	699.46	15	-\$27.01	100%	at stock turnover	\$0.01	75	245	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	891.81	15	\$213.96	100%	at stock turnover	\$0.01	20,151	20,195	EIA 2011
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	38,241.89	5	\$95,330.00	5%	15%	\$0.11	253	364	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	New	60,510.40	5	\$4,570.00	15%	50%	\$0.00	1,419	2,045	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	47,205.66	12	\$40,000.00	4%	25%	\$0.04	1,878	2,779	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	New	7,181.25	16	\$2,880.00	1%	3%	\$0.02	28	41	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	49,897.88	10	\$11,930.00	22%	45%	\$0.01	1,024	1,515	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	New	0.00	25	\$41,000.00	18%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$13,310.00	7%	15%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	New	5,008.14	5	\$11,000.00	10%	25%	\$0.08	42	70	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	201.42	15	\$161.54	100%	at stock turnover	\$0.02	34,143	33,373	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	43.71	15	\$3.75	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	200.88	6	\$4.17	100%	at stock turnover	\$0.01	0	44	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	163.49	15	\$75.93	100%	at stock turnover	\$0.02	9,722	5,557	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	6,344.39	3	\$31,750.00	0%	3%	\$0.05	48	71	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	379.27	7	\$1,400.00	1%	4%	\$0.08	3	3	Developed from RTF
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	Existing	5.55	7	\$30.00	1%	3%	\$0.42	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	Existing	271.51	10	\$190.00	1%	3%	\$0.05	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	Existing	5,838.04	15	\$8,370.00	15%	75%	\$0.11	293	293	AEG research & analysis
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	1,799.77	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Large Retail bldg.	Existing	322.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,781.10	3	\$31,750.00	0%	3%	\$0.04	49	48	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	451.32	7	\$1,400.00	1%	2%	\$0.07	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Large Retail bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	New	5,844.17	15	\$8,370.00	15%	75%	\$0.11	164	164	AEG research & analysis
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	New	1,799.77	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	4,598.22	3	\$31,750.00	0%	3%	\$0.05	30	30	BEST Simulation
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	12,619.34	6	\$94.69	100%	at stock turnover	\$0.00	897	947	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	Existing	1,043.22	4	\$2,650.00	10%	50%	\$0.19	548	625	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,484.47	6	\$61.58	100%	at stock turnover	\$0.00	177	186	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,194.97	6	\$148.41	100%	at stock turnover	\$0.01	62	66	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	3,122.27	5	\$4,000.00	10%	25%	\$0.10	629	703	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	385.01	6	\$2.89	100%	at stock turnover	\$0.00	50	53	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	3,425.98	6	\$43.80	100%	at stock turnover	\$0.00	56	58	ENERGY STAR Calculator
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,302.24	6	\$14.17	82%	at stock turnover	\$0.00	382	393	Assumed same as Desktop
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	12,619.34	6	\$94.69	100%	at stock turnover	\$0.00	560	555	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	New	1,172.96	4	\$2,650.00	10%	50%	\$0.16	298	317	Developed from RTF
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,484.47	6	\$61.58	100%	at stock turnover	\$0.00	110	109	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,194.97	6	\$148.41	100%	at stock turnover	\$0.01	39	39	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	3,567.83	5	\$4,000.00	10%	25%	\$0.08	340	362	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	385.01	6	\$2.89	100%	at stock turnover	\$0.00	30	30	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	3,425.98	6	\$43.80	100%	at stock turnover	\$0.00	29	29	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,302.24	6	\$17.00	98%	at stock turnover	\$0.00	231	227	Assumed same as Desktop
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	Existing	5,678.83	9	\$334.66	52%	at stock turnover	\$0.00	233	214	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	Existing	2,402.71	8	\$2,540.00	0%	25%	\$0.08	102	103	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	Existing	1,230.00	9	\$90.00	0%	25%	\$0.01	9	9	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	Existing	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	Existing	1,681.45	15	\$33,960.00	0%	25%	\$1.47	236	259	Developed from RTF
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	Existing	3,472.78	15	\$5,560.00	0%	25%	\$0.12	491	531	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	Existing	3,436.27	4	\$10.00	0%	25%	\$0.00	4	4	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	Existing	13,099.25	10	\$1,989.46	52%	at stock turnover	\$0.01	1,186	1,034	EIA 2011
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	New	5,678.83	9	\$502.00	79%	at stock turnover	\$0.01	190	172	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	New	2,914.15	8	\$2,540.00	0%	25%	\$0.07	71	71	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	New	1,230.00	9	\$90.00	0%	25%	\$0.01	6	6	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	New	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	New	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	New	1,633.78	15	\$33,960.00	0%	25%	\$1.51	146	151	Developed from RTF
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	New	3,357.34	15	\$5,560.00	0%	25%	\$0.12	301	311	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	New	3,434.34	4	\$10.00	0%	25%	\$0.00	3	3	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	New	13,099.25	10	\$2,984.20	79%	at stock turnover	\$0.02	1,147	1,053	EIA 2011
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	4,945.51	15	\$31,750.00	20%	65%	\$0.03	359	464	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	2,692.51	18	\$110.00	15%	25%	\$0.00	47	62	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	-1,478.52	15	\$260.00	15%	75%	\$0.02	-61	-83	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	5,686.42	50	\$250,000.00	15%	25%	\$0.49	88	137	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	-331.71	45	\$126,270.00	15%	35%	\$0.09	-10	-14	BEST Simulation
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	56.70	20	\$820.00	15%	35%	\$0.01	2	2	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	3,136.09	20	\$35,000.00	15%	50%	\$0.07	175	229	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	469.17	45	\$77,100.00	15%	35%	\$0.11	15	20	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	5,777.43	3	\$61,000.00	10%	75%	\$0.05	589	782	6th Plan
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,173.69	3	\$31,750.00	0%	3%	\$0.04	20	33	BEST Simulation
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	Existing	1,501.34	15	\$22,000.00	15%	75%	\$0.99	138	188	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	Existing	14,243.30	18	\$17,000.00	15%	35%	\$0.08	452	593	DEER
Large Retail	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Large Retail bldg.	Existing	60,726.94	20	\$56,400.34	100%	at stock turnover	\$0.07	2,006	2,029	BEST Simulation
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	Existing	42,141.69	15	\$7,040.00	13%	50%	\$0.01	2,672	3,219	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	17,410.92	20	\$400,000.00	10%	30%	\$0.08	325	336	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	New	3,547.49	3	\$96,000.00	10%	75%	\$0.10	215	222	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	New	3,174.36	15	\$31,750.00	20%	65%	\$0.04	134	138	BEST Simulation
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	1,430.41	18	\$100.00	15%	25%	\$0.00	13	14	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	-1,036.79	15	\$260.00	15%	75%	\$0.01	-58	-60	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	3,463.03	50	\$250,000.00	15%	25%	\$0.64	32	33	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-992.83	45	\$126,270.00	15%	50%	\$0.10	-32	-33	BEST Simulation
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	2,003.57	20	\$35,000.00	15%	50%	\$0.08	66	68	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	22.87	45	\$77,100.00	15%	50%	\$0.84	1	1	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	2,562.77	3	\$31,750.00	0%	3%	\$0.05	9	10	BEST Simulation
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	New	914.27	15	\$13,000.00	15%	75%	\$0.88	51	53	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	New	8,798.23	18	\$17,000.00	15%	35%	\$0.13	164	169	DEER
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	New	27,460.81	15	\$7,040.00	19%	50%	\$0.02	788	814	BEST Simulation
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	7,971.11	5	\$18,000.00	3%	75%	\$0.15	439	484	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	894.54	7	\$1,400.00	1%	4%	\$0.08	2	2	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	Existing	50,358.73	20	\$1,120.00	0%	2%	\$0.00	64	65	Developed from RTF (Residential)
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	8,695.82	5	\$4,000.00	1%	10%	\$0.03	63	66	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	Existing	22,958.55	5	\$1,320.00	25%	65%	\$0.00	274	279	DEER
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$640.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	Existing	344.39	15	\$30.00	15%	75%	\$0.01	16	17	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	5,591.25	15	\$4,420.00	16%	75%	\$0.06	261	269	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	Existing	19,219.55	20	\$25,000.00	1%	30%	\$0.09	436	457	BEST Simulation
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	Existing	1,919.51	13	\$97.81	63%	at stock turnover	\$0.00	105	100	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	8,321.02	5	\$18,000.00	3%	75%	\$0.15	465	499	AEG study for PN&L
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	26,084.33	20	\$400,000.00	10%	30%	\$0.08	193	194	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	7,511.40	5	\$18,000.00	6%	75%	\$0.15	191	192	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	843.23	7	\$1,400.00	1%	2%	\$0.07	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	New	50,220.84	20	\$1,120.00	0%	2%	\$0.00	39	39	Developed from RTF (Residential)
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	New	8,746.99	5	\$4,000.00	0%	75%	\$0.03	243	245	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	New	22,872.10	5	\$1,320.00	25%	65%	\$0.00	128	128	DEER
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$640.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	New	344.64	15	\$30.00	15%	75%	\$0.01	8	8	DEER
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	5,647.02	15	\$4,420.00	1%	75%	\$0.06	155	156	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	New	17,992.22	20	\$25,000.00	1%	30%	\$0.09	192	194	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	New	1,919.51	13	\$97.81	63%	at stock turnover	\$0.00	74	72	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	7,808.94	5	\$18,000.00	6%	75%	\$0.15	199	201	AEG study for PN&L
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	103,216.51	23	\$105,044.75	20%	at stock turnover	\$0.01	706	676	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	Existing	22,307.38	23	\$8,505.93	5%	at stock turnover	\$0.03	91	92	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	12,872.72	10	\$814.00	15%	75%	\$0.00	84	96	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	4,191.87	15	\$1,617.00	15%	75%	\$0.02	26	32	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	Existing	212.33	15	\$638.00	15%	75%	\$0.18	1	2	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	8,895.08	15	\$16,901.50	45%	85%	\$0.23	554	644	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	De-stratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	Existing	36,328.27	12	\$24,750.00	15%	30%	\$0.04	986	1,230	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	6,307.75	10	\$8,250.00	15%	35%	\$0.05	227	261	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	66,034.34	15	\$3,569.50	15%	75%	\$0.00	1,307	1,545	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	Existing	25,181.23	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	140,679.78	23	\$133,666.67	3%	at stock turnover	\$0.01	143	143	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	Existing	38,166.68	10	\$5,241.50	18%	75%	\$0.01	1,110	1,252	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	18,727.30	15	\$258.50	15%	75%	\$0.00	2,114	2,324	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	12,237.81	50	\$137,500.00	15%	25%	\$0.54	213	281	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	-5,300.64	45	\$69,448.50	15%	35%	\$0.40	-184	-219	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	10,437.38	45	\$38,104.00	15%	35%	\$0.14	373	432	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	6,711.36	20	\$19,250.00	15%	50%	\$0.09	421	486	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	-3,731.66	45	\$42,405.00	15%	35%	\$0.23	-133	-154	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	20,094.60	15	\$258.50	15%	75%	\$0.00	2,319	2,601	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	Existing	39,562.50	15	\$20,538.02	31%	at stock turnover	\$0.04	2,566	2,372	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	12,413.01	3	\$33,550.00	10%	75%	\$0.08	1,427	1,669	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	Existing	15,923.78	23	\$51,463.49	9%	at stock turnover	\$0.30	244	196	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$23,056.00	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	Existing	37,492.64	23	\$12,869.85	20%	at stock turnover	\$0.03	1,047	1,044	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	10,259.91	10	\$814.00	15%	75%	\$0.01	250	314	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	12,723.82	4	\$814.00	15%	75%	\$0.00	305	393	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	5,707.07	15	\$1,617.00	15%	75%	\$0.02	131	183	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	Existing	217.70	15	\$7,425.00	15%	75%	\$1.83	5	7	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	50,234.00	20	\$220,000.00	10%	25%	\$0.08	1,138	1,170	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	98,581.96	23	\$87,696.43	23%	at stock turnover	\$0.01	994	950	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	New	20,191.93	23	\$8,070.53	6%	at stock turnover	\$0.03	168	170	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	9,978.05	10	\$814.00	15%	75%	\$0.01	52	53	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	3,879.58	15	\$1,617.00	15%	75%	\$0.02	20	21	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$638.00	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	New	10,240.78	3	\$52,800.00	10%	75%	\$0.14	1,002	1,030	6th Plan
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	2,306.76	15	\$16,901.50	45%	85%	\$0.82	121	125	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	New	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	De-stratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	New	30,981.20	12	\$24,750.00	15%	30%	\$0.05	703	722	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	5,244.44	10	\$8,250.00	15%	50%	\$0.06	277	284	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	53,579.87	15	\$3,569.50	15%	75%	\$0.00	865	890	Developed from RTF
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	New	25,181.23	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	134,446.27	23	\$111,591.39	3%	at stock turnover	\$0.01	168	168	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	New	35,220.23	10	\$5,241.50	18%	75%	\$0.01	304	309	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	18,164.52	15	\$258.50	15%	75%	\$0.00	1,656	1,703	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	9,998.17	50	\$137,500.00	15%	25%	\$0.63	150	154	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	-3,153.20	45	\$69,448.50	15%	50%	\$1.00	-166	-170	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	8,625.74	45	\$38,104.00	15%	50%	\$0.16	455	467	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	5,558.33	20	\$19,250.00	15%	50%	\$0.10	293	301	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	-90.07	45	\$42,405.00	15%	50%	\$1.56	-5	-5	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	19,465.56	15	\$258.50	15%	75%	\$0.00	1,782	1,832	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	New	34,841.65	15	\$19,490.95	37%	at stock turnover	\$0.04	2,483	2,319	BEST Simulation
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	New	13,557.81	23	\$52,398.32	11%	at stock turnover	\$0.36	314	248	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	New	0.00	15	\$23,056.00	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	New	34,120.58	23	\$12,211.06	24%	at stock turnover	\$0.03	1,453	1,449	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	7,738.23	10	\$814.00	15%	75%	\$0.01	153	164	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	New	9,616.85	4	\$814.00	15%	75%	\$0.00	190	204	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	4,888.86	15	\$1,617.00	15%	75%	\$0.02	96	103	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$7,425.00	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	1,951.92	5	\$357.50	15%	25%	\$0.01	86	171	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	407.91	10	\$1,886.50	33%	60%	\$0.24	49	99	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	Existing	11,226.21	10	\$2,948.00	15%	30%	\$0.01	769	1,442	AEG research & analysis
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	747.42	15	-\$38.48	100%	at stock turnover	\$0.01	28	101	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	952.95	15	\$304.84	100%	at stock turnover	\$0.01	7,545	7,635	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	214.38	15	\$229.23	100%	at stock turnover	\$0.03	332	323	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	46.52	15	\$5.32	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	644.82	3	\$33,550.00	10%	75%	\$0.08	185	297	6th Plan
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	191.68	6	\$5.31	100%	at stock turnover	\$0.01	0	7	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	156.01	15	\$96.61	100%	at stock turnover	\$0.03	1,158	849	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	3,148.23	20	\$220,000.00	10%	25%	\$0.08	127	192	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	545.96	3	\$52,800.00	10%	75%	\$0.14	95	144	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	1,701.76	5	\$357.50	15%	25%	\$0.01	46	69	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	452.34	10	\$1,886.50	44%	60%	\$0.18	20	30	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	New	9,779.68	10	\$2,948.00	15%	30%	\$0.01	398	601	AEG research & analysis
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	747.42	15	-\$38.48	100%	at stock turnover	\$0.01	22	76	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	952.95	15	\$304.84	100%	at stock turnover	\$0.01	6,077	6,144	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	214.38	15	\$229.23	100%	at stock turnover	\$0.03	284	278	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	46.52	15	\$5.32	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	191.68	6	\$5.31	100%	at stock turnover	\$0.01	0	7	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	156.01	15	\$96.61	100%	at stock turnover	\$0.03	970	560	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	32,824.37	15	\$128.25	30%	at stock turnover	\$0.00	282	276	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	3,345.35	10	\$187.42	21%	at stock turnover	\$0.00	138	120	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	5,671.38	18	\$578.09	30%	at stock turnover	\$0.01	38	37	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	6,023.19	10	\$277.21	14%	at stock turnover	\$0.00	110	95	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	32,824.37	15	\$166.72	39%	at stock turnover	\$0.00	351	344	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	3,345.35	10	\$243.64	27%	at stock turnover	\$0.01	141	128	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	5,671.38	18	\$751.52	39%	at stock turnover	\$0.01	40	40	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	6,023.19	10	\$360.37	18%	at stock turnover	\$0.00	112	102	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	12,433.20	23	\$17,737.59	20%	at stock turnover	\$0.01	84	80	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	-4,814.68	15	\$16,901.50	45%	85%	\$0.23	-232	-243	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	4,488.25	10	\$8,250.00	15%	35%	\$0.05	126	130	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	66,443.19	15	\$3,569.50	15%	75%	\$0.00	2,494	2,451	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	14,169.26	23	\$16,362.11	3%	at stock turnover	\$0.01	13	13	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	-11,479.94	15	\$258.50	15%	75%	\$0.00	-950	-995	BEST Simulation
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	17,511.73	45	\$69,448.50	15%	35%	\$0.40	476	506	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	7,416.31	45	\$38,104.00	15%	35%	\$0.14	207	214	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	5,819.42	20	\$19,250.00	15%	50%	\$0.09	285	294	BEST Simulation
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	16,960.17	45	\$42,405.00	15%	35%	\$0.23	471	490	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	-12,856.77	15	\$258.50	15%	75%	\$0.00	-1,105	-1,120	BEST Simulation
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	8,816.05	3	\$33,550.00	10%	75%	\$0.08	791	828	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	Existing	0.00	14	\$226,226.00	3%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	39,016.42	20	\$220,000.00	10%	25%	\$0.08	504	504	AEG research & analysis
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	5,483.96	23	\$15,268.75	23%	at stock turnover	\$0.01	51	48	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	New	7,938.60	3	\$52,800.00	10%	75%	\$0.14	443	443	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	-1,480.12	15	\$16,901.50	45%	85%	\$0.82	-44	-44	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	4,072.45	10	\$8,250.00	15%	50%	\$0.06	122	123	AEG research & analysis
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	66,141.19	15	\$3,569.50	15%	75%	\$0.00	1,449	1,449	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	11,736.16	23	\$13,659.95	3%	at stock turnover	\$0.01	12	12	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	-9,625.84	15	\$258.50	15%	75%	\$0.00	-496	-497	BEST Simulation
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	8,086.12	45	\$69,448.50	15%	50%	\$1.00	242	243	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	6,687.24	45	\$38,104.00	15%	50%	\$0.16	201	201	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	5,260.08	20	\$19,250.00	15%	50%	\$0.10	158	158	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	1,864.97	45	\$42,405.00	15%	50%	\$1.56	56	56	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	-10,806.62	15	\$258.50	15%	75%	\$0.00	-561	-561	BEST Simulation
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	New	0.00	14	\$226,226.00	6%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	631.73	15	-\$32.53	100%	at stock turnover	\$0.01	11	42	EIA 2011
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	805.45	15	\$257.66	100%	at stock turnover	\$0.01	3,118	3,155	EIA 2011
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	5,544.78	5	\$8,734.00	5%	15%	\$0.08	79	165	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	Existing	8,023.13	5	\$1,430.00	15%	50%	\$0.01	416	819	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	14,346.78	12	\$22,000.00	3%	25%	\$0.07	1,140	3,000	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	Existing	2,189.43	16	\$902.00	1%	3%	\$0.02	16	51	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	15,605.11	10	\$3,734.50	7%	45%	\$0.01	1,582	3,883	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	Existing	0.00	25	\$26,647.50	15%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$4,048.00	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	Existing	9,307.54	5	\$6,050.00	10%	25%	\$0.03	150	470	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	209.85	15	\$224.39	100%	at stock turnover	\$0.03	6,834	6,639	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	45.54	15	\$5.20	100%	at stock turnover	\$0.01	0	1	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	5,042.62	15	\$258.50	15%	75%	\$0.00	343	997	BEST Simulation
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	2,300.35	3	\$33,550.00	10%	75%	\$0.08	535	1,060	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	198.93	6	\$5.51	100%	at stock turnover	\$0.01	0	119	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	161.91	15	\$100.26	100%	at stock turnover	\$0.03	19,615	14,374	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	10,709.70	20	\$220,000.00	10%	25%	\$0.08	410	645	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	1,793.39	3	\$52,800.00	10%	75%	\$0.14	295	465	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	631.73	15	-\$32.53	100%	at stock turnover	\$0.01	9	31	EIA 2011
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	805.45	15	\$257.66	100%	at stock turnover	\$0.01	2,511	2,539	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	4,627.48	5	\$8,734.00	5%	15%	\$0.09	44	63	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	New	6,859.23	5	\$1,430.00	15%	50%	\$0.01	229	329	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	11,191.45	12	\$22,000.00	4%	25%	\$0.08	584	919	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	New	1,752.98	16	\$902.00	1%	3%	\$0.02	9	14	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	12,172.89	10	\$3,734.50	22%	45%	\$0.01	329	518	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	New	0.00	25	\$26,647.50	18%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	New	0.00	8	\$4,048.00	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	New	7,041.09	5	\$6,050.00	10%	25%	\$0.04	84	140	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	209.85	15	\$224.39	100%	at stock turnover	\$0.03	5,834	5,714	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	45.54	15	\$5.20	100%	at stock turnover	\$0.01	0	1	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	3,732.54	15	\$258.50	15%	75%	\$0.00	179	298	BEST Simulation
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	198.93	6	\$5.51	100%	at stock turnover	\$0.01	0	112	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	161.91	15	\$100.26	100%	at stock turnover	\$0.03	16,419	9,483	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	110.64	7	\$1,397.00	1%	8%	\$0.11	2	2	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	Existing	1.62	7	\$33.00	1%	3%	\$1.60	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	Existing	79.11	10	\$192.50	1%	3%	\$0.19	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	Existing	0.00	13	\$0.00	91%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	Existing	1,674.58	15	\$8,321.50	15%	75%	\$0.39	217	217	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	Existing	1,402.59	10	\$242.34	27%	at stock turnover	\$0.01	68	62	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	Existing	503.33	10	\$519.56	76%	at stock turnover	\$0.08	70	64	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	Existing	19.77	5	\$60.50	15%	75%	\$0.20	2	2	AEG research & analysis
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	121.07	7	\$1,397.00	1%	4%	\$0.11	1	1	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	New	1,674.58	15	\$8,321.50	15%	75%	\$0.39	140	140	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	New	1,402.59	10	\$290.80	32%	at stock turnover	\$0.02	66	62	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	New	503.33	10	\$623.47	91%	at stock turnover	\$0.10	68	64	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	New	18.98	5	\$60.50	15%	75%	\$0.21	1	1	AEG research & analysis
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$550,000.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	2,060.68	6	\$15.46	100%	at stock turnover	\$0.00	166	175	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	Existing	108.99	4	\$1,457.50	10%	50%	\$0.98	65	72	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	405.70	6	\$10.06	100%	at stock turnover	\$0.00	33	35	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	358.43	6	\$24.23	100%	at stock turnover	\$0.01	12	12	ENERGY STAR Calculator
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	322.10	5	\$2,200.00	10%	25%	\$0.51	72	80	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	419.13	6	\$1.82	58%	at stock turnover	\$0.00	36	38	Assumed same as Desktop
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	447.56	6	\$5.72	100%	at stock turnover	\$0.00	8	9	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	1,503.78	6	\$11.28	100%	at stock turnover	\$0.00	317	327	Assumed same as Desktop
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	New	0.00	20	\$165,000.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	New	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	2,060.68	6	\$15.46	100%	at stock turnover	\$0.00	131	129	ENERGY STAR Calculator
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	New	113.12	4	\$1,457.50	10%	50%	\$0.93	39	42	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	405.70	6	\$10.06	100%	at stock turnover	\$0.00	26	25	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	358.43	6	\$24.23	100%	at stock turnover	\$0.01	9	9	ENERGY STAR Calculator
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	336.12	5	\$2,200.00	10%	25%	\$0.48	44	46	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	419.13	6	\$2.01	64%	at stock turnover	\$0.00	30	30	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	447.56	6	\$5.72	100%	at stock turnover	\$0.00	6	5	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	1,503.78	6	\$11.28	100%	at stock turnover	\$0.00	219	215	Assumed same as Desktop
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,629.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	Existing	1,895.07	9	\$125.53	59%	at stock turnover	\$0.01	93	86	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	Existing	1,230.00	9	\$93.50	0%	10%	\$0.01	6	6	PacifiCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$28,275.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$5,560.50	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$16,890.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	Existing	8,742.62	10	\$1,492.50	59%	at stock turnover	\$0.01	1,010	881	EIA 2011
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	New	0.00	5	\$1,545.50	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	New	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	New	1,895.07	9	\$163.19	77%	at stock turnover	\$0.01	88	80	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	New	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	New	1,230.00	9	\$93.50	0%	10%	\$0.01	4	4	PacificCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	New	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	New	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	New	0.00	15	\$28,275.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	New	0.00	15	\$5,560.50	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	New	0.00	4	\$16,890.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	New	8,742.62	10	\$1,940.25	77%	at stock turnover	\$0.02	1,152	1,059	EIA 2011
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	203.75	15	\$16,901.50	45%	85%	\$0.23	14	17	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	0.00	10	\$8,250.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	-891.57	15	\$258.50	15%	75%	\$0.00	-107	-126	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	3,685.53	50	\$137,500.00	15%	25%	\$0.54	71	96	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	388.39	45	\$69,448.50	15%	35%	\$0.40	15	18	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	2,010.50	20	\$19,250.00	15%	50%	\$0.09	140	166	BEST Simulation
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	304.25	45	\$42,405.00	15%	35%	\$0.23	12	14	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	3,748.66	3	\$33,550.00	10%	75%	\$0.08	481	576	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	Existing	972.98	15	\$12,100.00	15%	75%	\$0.87	113	138	6th Plan
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	Existing	9,287.10	18	\$9,350.00	15%	35%	\$0.07	374	439	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	Existing	21,544.97	20	\$11,318.17	100%	at stock turnover	\$0.04	559	565	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	Existing	26,667.82	15	\$957.00	13%	50%	\$0.00	2,096	2,311	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	14,107.24	20	\$220,000.00	10%	25%	\$0.08	291	293	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	New	2,872.22	3	\$52,800.00	10%	75%	\$0.14	256	258	6th Plan
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	185.82	15	\$16,901.50	45%	85%	\$0.82	9	9	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	0.00	10	\$8,250.00	15%	50%	\$0.00	0	0	AEG research & analysis
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	-817.84	15	\$258.50	15%	75%	\$0.00	-68	-68	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	2,803.53	50	\$137,500.00	15%	25%	\$0.63	38	39	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	195.42	45	\$69,448.50	15%	50%	\$1.00	9	9	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	1,542.45	20	\$19,250.00	15%	50%	\$0.10	74	75	BEST Simulation
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	18.37	45	\$42,405.00	15%	50%	\$1.56	1	1	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	New	740.21	15	\$7,150.00	15%	75%	\$0.65	61	61	6th Plan
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	New	7,165.92	18	\$9,350.00	15%	35%	\$0.09	197	198	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	New	18,105.96	20	\$10,252.06	100%	at stock turnover	\$0.04	185	187	BEST Simulation
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	New	20,003.88	15	\$957.00	19%	50%	\$0.00	845	849	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	19,472.21	5	\$9,900.00	3%	75%	\$0.03	994	1,099	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	710.16	7	\$1,397.00	1%	8%	\$0.11	3	4	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	Existing	123,454.91	20	\$1,116.50	0%	3%	\$0.00	230	233	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	23,254.43	5	\$2,200.00	1%	10%	\$0.01	158	161	AEG study for LA Dept of Water & Power
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	Existing	54,536.91	5	\$7,062.00	25%	65%	\$0.01	598	627	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

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Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	Existing	7,768.73	15	\$407.00	15%	25%	\$0.00	57	58	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	Existing	163.62	15	\$16.50	15%	75%	\$0.01	7	7	DEER
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	14,545.37	15	\$3,278.00	16%	75%	\$0.02	633	647	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	Existing	46,941.76	20	\$37,499.00	1%	30%	\$0.06	987	1,037	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	Existing	4,705.00	13	\$452.80	50%	at stock turnover	\$0.01	238	227	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	20,326.44	5	\$9,900.00	3%	75%	\$0.03	1,052	1,132	AEG study for PN&L
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	59,119.85	20	\$220,000.00	10%	25%	\$0.08	381	383	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	19,757.10	5	\$9,900.00	6%	75%	\$0.03	590	594	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	681.01	7	\$1,397.00	1%	4%	\$0.11	1	1	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	New	123,112.51	20	\$1,116.50	0%	3%	\$0.00	156	158	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	New	23,176.82	5	\$2,200.00	0%	75%	\$0.01	755	761	AEG study for LA Dept of Water & Power
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	New	52,175.88	5	\$7,062.00	25%	65%	\$0.01	339	341	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	New	7,741.76	15	\$407.00	15%	25%	\$0.00	34	34	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	New	163.83	15	\$16.50	15%	75%	\$0.01	4	4	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	New	13,970.67	15	\$3,278.00	1%	75%	\$0.02	448	451	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	New	45,524.73	20	\$37,499.00	1%	30%	\$0.06	570	574	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	New	4,705.00	13	\$452.80	50%	at stock turnover	\$0.01	213	206	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	18,516.04	5	\$9,900.00	6%	75%	\$0.03	551	555	AEG study for PN&L
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	160,974.86	23	\$182,864.65	8%	at stock turnover	\$0.06	3,097	2,965	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	Existing	88,313.25	23	\$23,861.21	5%	at stock turnover	\$0.02	1,207	1,218	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	65,731.24	10	\$5,430.00	15%	75%	\$0.01	1,071	1,188	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	6,739.52	15	\$14,620.00	15%	75%	\$0.14	102	129	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	Existing	2,056.08	15	\$5,780.00	15%	75%	\$0.17	31	39	BEST Simulation
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

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Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	48,242.91	15	\$78,000.00	45%	85%	\$0.39	6,548	7,967	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	11,825.60	10	\$15,000.00	15%	35%	\$0.04	968	1,116	AEG research & analysis
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	106,539.52	15	\$23,810.00	15%	25%	\$0.01	234	271	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	19,899.98	15	\$31,750.00	20%	65%	\$0.04	3,702	4,225	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	Existing	39,348.07	15	\$66,548.32	2%	at stock turnover	\$0.14	314	296	PacifiCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	142,044.65	23	\$150,490.21	1%	at stock turnover	\$0.06	448	449	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	2,159.95	18	\$150.00	15%	50%	\$0.01	316	379	BEST Simulation
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	Existing	78,758.86	10	\$47,480.00	18%	75%	\$0.04	7,306	9,149	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	21,001.08	50	\$250,000.00	15%	25%	\$0.61	797	1,114	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	17,160.89	45	\$126,270.00	15%	35%	\$0.08	1,371	1,619	BEST Simulation
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	8,766.14	20	\$820.00	15%	50%	\$0.04	1,273	1,448	BEST Simulation
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	18,296.05	45	\$69,280.00	15%	35%	\$0.11	1,449	1,727	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	11,764.49	20	\$35,000.00	15%	50%	\$0.07	1,639	1,943	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	-6,541.41	45	\$77,100.00	15%	35%	\$0.11	-516	-617	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	Existing	61,820.17	15	\$32,092.61	4%	at stock turnover	\$0.04	1,321	1,221	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	21,773.89	3	\$61,000.00	10%	75%	\$0.07	5,585	6,678	6th Plan
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	Existing	168,534.80	23	\$610,986.54	44%	at stock turnover	\$0.34	11,450	9,586	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$208,770.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	15,795.11	3	\$31,750.00	5%	16%	\$0.05	686	989	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	Existing	131,780.35	23	\$36,103.05	21%	at stock turnover	\$0.02	9,075	9,041	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	38,118.13	10	\$5,430.00	15%	75%	\$0.01	2,361	2,819	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	47,253.55	4	\$5,430.00	15%	75%	\$0.01	2,889	3,535	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	4,913.11	15	\$14,620.00	15%	75%	\$0.18	279	386	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,799.53	15	\$67,190.00	15%	75%	\$2.10	98	144	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	78,005.12	20	\$400,000.00	10%	15%	\$0.09	1,967	2,097	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	151,708.24	23	\$159,330.49	11%	at stock turnover	\$0.06	6,771	6,475	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	New	74,694.45	23	\$21,147.75	7%	at stock turnover	\$0.02	2,198	2,220	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	51,052.34	10	\$5,430.00	15%	75%	\$0.01	995	1,021	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	5,773.98	15	\$14,620.00	15%	75%	\$0.15	111	114	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	New	1,186.36	15	\$5,780.00	15%	75%	\$0.28	23	23	BEST Simulation
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	16,376.47	3	\$96,000.00	10%	75%	\$0.12	5,360	5,716	6th Plan
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	11,445.89	15	\$78,000.00	45%	85%	\$21.73	2,013	2,147	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	8,989.77	10	\$15,000.00	15%	50%	\$0.05	1,594	1,700	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	86,171.72	15	\$23,810.00	15%	25%	\$0.01	232	238	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	15,192.41	15	\$31,750.00	20%	65%	\$0.05	3,466	3,697	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	New	39,348.07	15	\$97,042.31	3%	at stock turnover	\$0.20	586	557	PacifiCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	134,037.17	23	\$131,122.55	2%	at stock turnover	\$0.06	991	993	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	1,644.29	18	\$140.00	15%	50%	\$0.00	292	312	BEST Simulation
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	New	58,881.11	10	\$47,480.00	18%	75%	\$0.05	2,516	2,680	DEER
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	15,987.74	50	\$250,000.00	15%	25%	\$0.79	804	857	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	-860.29	45	\$126,270.00	15%	50%	\$0.11	-152	-162	BEST Simulation
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	5,721.13	20	\$820.00	15%	50%	\$0.01	1,017	1,084	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	13,819.80	45	\$69,280.00	15%	50%	\$0.13	2,438	2,600	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	8,976.17	20	\$35,000.00	15%	50%	\$0.09	1,585	1,690	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	-143.88	45	\$77,100.00	15%	50%	\$0.91	-25	-27	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	New	54,443.39	15	\$30,456.46	6%	at stock turnover	\$0.04	1,937	1,815	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	New	158,933.32	23	\$532,354.30	59%	at stock turnover	\$0.31	24,971	20,778	BEST Simulation
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$208,770.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	New	112,171.63	23	\$31,997.47	29%	at stock turnover	\$0.02	17,950	17,890	BEST Simulation

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Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	27,155.85	10	\$5,430.00	15%	75%	\$0.01	2,014	2,156	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	33,743.43	4	\$5,430.00	15%	75%	\$0.01	2,496	2,673	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	3,947.64	15	\$14,620.00	15%	75%	\$0.19	289	309	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	New	996.94	15	\$67,190.00	15%	75%	\$3.35	73	78	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	1,682.34	15	\$31,750.00	20%	65%	\$0.04	749	1,269	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	5,091.58	5	\$920.00	15%	25%	\$0.01	506	1,080	Illinois TRM
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	189.04	10	\$1,420.00	33%	60%	\$0.38	50	111	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	Existing	29,236.51	10	\$2,220.00	15%	30%	\$0.00	4,504	9,119	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	871.16	15	-\$53.82	100%	at stock turnover	\$0.01	148	506	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,110.72	15	\$426.38	100%	at stock turnover	\$0.01	40,285	40,426	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	167.53	15	\$214.97	100%	at stock turnover	\$0.04	2,055	1,995	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	36.36	15	\$4.99	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	1,662.09	3	\$61,000.00	10%	75%	\$0.07	1,057	1,811	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	175.37	6	\$5.83	100%	at stock turnover	\$0.01	0	34	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	142.73	15	\$106.06	100%	at stock turnover	\$0.04	9,207	6,465	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	1,444.76	3	\$31,750.00	5%	16%	\$0.05	155	407	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	7,680.01	20	\$400,000.00	10%	15%	\$0.09	329	492	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	1,360.02	3	\$96,000.00	10%	75%	\$0.12	757	1,131	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	1,390.04	15	\$31,750.00	20%	65%	\$0.05	537	802	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	4,207.70	5	\$920.00	15%	25%	\$0.01	361	540	Illinois TRM
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	163.99	10	\$1,420.00	44%	60%	\$0.37	23	34	AEG research & analysis

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Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	New	24,180.03	10	\$2,220.00	15%	30%	\$0.00	3,136	4,685	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	871.16	15	-\$53.82	100%	at stock turnover	\$0.01	152	511	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,110.72	15	\$426.38	100%	at stock turnover	\$0.01	45,300	45,604	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	167.53	15	\$214.97	100%	at stock turnover	\$0.04	2,369	2,320	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	36.36	15	\$4.99	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	175.37	6	\$5.83	100%	at stock turnover	\$0.01	0	40	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	142.73	15	\$106.06	100%	at stock turnover	\$0.03	10,007	5,642	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	11,169.73	15	\$20.90	15%	at stock turnover	\$0.00	109	107	Illinois TRM
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,138.38	10	\$90.80	30%	at stock turnover	\$0.01	158	137	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,929.90	18	\$94.22	15%	at stock turnover	\$0.00	14	14	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	2,049.62	10	\$402.61	59%	at stock turnover	\$0.02	377	327	Developed from RTF "ComCookingConvectionOven" v2.0
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	11,169.73	15	\$29.26	22%	at stock turnover	\$0.00	197	193	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,138.38	10	\$127.13	42%	at stock turnover	\$0.01	234	212	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,929.90	18	\$131.91	22%	at stock turnover	\$0.01	23	22	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	2,049.62	10	\$563.66	82%	at stock turnover	\$0.02	558	507	Developed from RTF "ComCookingConvectionOven" v2.0
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	28,015.63	23	\$131,208.13	8%	at stock turnover	\$0.06	534	506	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	-39,705.20	15	\$78,000.00	45%	85%	\$0.39	-1,986	-2,148	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	15,475.75	10	\$15,000.00	15%	35%	\$0.04	468	478	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	206,787.01	15	\$23,810.00	15%	25%	\$0.01	1,278	1,278	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	26,052.99	15	\$31,750.00	20%	65%	\$0.04	1,787	1,812	BEST Simulation
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	21,827.96	23	\$133,509.83	1%	at stock turnover	\$0.06	69	69	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	-1,858.99	18	\$150.00	15%	50%	\$0.01	-99	-102	BEST Simulation
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	102,897.88	45	\$126,270.00	15%	35%	\$0.08	3,101	3,180	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	-7,565.42	20	\$820.00	15%	50%	\$0.04	-403	-409	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	25,118.13	45	\$69,280.00	15%	35%	\$0.11	740	776	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	19,710.39	20	\$35,000.00	15%	50%	\$0.07	1,022	1,066	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	57,440.42	45	\$77,100.00	15%	35%	\$0.11	1,686	1,775	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	29,593.74	3	\$61,000.00	10%	75%	\$0.07	2,795	2,973	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	14	\$193,410.00	3%	75%	\$10.00	0	0	DEER
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	21,438.98	3	\$31,750.00	5%	16%	\$0.05	343	387	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	124,102.10	20	\$400,000.00	10%	15%	\$0.09	824	827	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	24,417.21	23	\$119,664.60	11%	at stock turnover	\$0.06	1,006	956	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	24,956.88	3	\$96,000.00	10%	75%	\$0.12	2,146	2,153	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	-13,865.13	15	\$78,000.00	45%	85%	\$21.73	-641	-643	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	13,496.78	10	\$15,000.00	15%	50%	\$0.05	628	630	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	205,882.17	15	\$23,810.00	15%	25%	\$0.01	1,007	1,007	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	22,811.22	15	\$31,750.00	20%	65%	\$0.05	1,365	1,370	BEST Simulation
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	19,476.33	23	\$116,327.73	2%	at stock turnover	\$0.06	134	134	BEST Simulation
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	5,487.65	18	\$140.00	15%	50%	\$0.00	256	256	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	87,880.05	45	\$126,270.00	15%	50%	\$0.11	4,082	4,095	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	3,884.86	20	\$820.00	15%	50%	\$0.01	181	182	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	21,023.32	45	\$69,280.00	15%	50%	\$0.13	974	977	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	17,432.26	20	\$35,000.00	15%	50%	\$0.09	811	813	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	5,927.64	45	\$77,100.00	15%	50%	\$0.91	274	275	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	New	0.00	14	\$193,410.00	6%	75%	\$10.00	0	0	DEER
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	4,174.66	15	\$31,750.00	20%	65%	\$0.04	1,888	3,149	BEST Simulation
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	700.83	15	-\$43.30	100%	at stock turnover	\$0.01	79	270	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	893.55	15	\$343.01	100%	at stock turnover	\$0.01	21,495	21,570	EIA 2011
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	23,290.09	5	\$36,960.00	5%	15%	\$0.08	780	1,645	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	Existing	36,701.16	5	\$2,290.00	15%	50%	\$0.00	4,653	8,666	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	24,838.49	12	\$40,000.00	3%	25%	\$0.08	5,364	11,486	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	3,759.64	16	\$1,440.00	1%	3%	\$0.02	76	182	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	26,903.36	10	\$5,970.00	7%	45%	\$0.01	7,387	14,803	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	25	\$123,000.00	15%	25%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$6,570.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	4,634.62	5	\$11,000.00	10%	25%	\$0.10	181	550	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	256.55	15	\$329.20	100%	at stock turnover	\$0.04	68,559	66,527	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	55.67	15	\$7.63	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	3,939.21	3	\$61,000.00	10%	75%	\$0.07	2,490	4,292	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	232.76	6	\$7.73	100%	at stock turnover	\$0.01	0	106	EIA 2011
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	189.44	15	\$140.77	100%	at stock turnover	\$0.04	28,818	20,234	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,449.10	3	\$31,750.00	5%	16%	\$0.05	370	994	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	19,837.51	20	\$400,000.00	10%	15%	\$0.09	870	1,273	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	3,359.47	3	\$96,000.00	10%	75%	\$0.12	1,906	2,789	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	3,590.58	15	\$31,750.00	20%	65%	\$0.05	1,419	2,077	BEST Simulation
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	700.83	15	-\$43.30	100%	at stock turnover	\$0.01	81	273	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	893.55	15	\$343.01	100%	at stock turnover	\$0.01	24,171	24,333	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	19,721.01	5	\$36,960.00	5%	15%	\$0.09	595	845	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	New	30,382.64	5	\$2,290.00	15%	50%	\$0.00	3,249	4,610	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	21,077.29	12	\$40,000.00	4%	25%	\$0.09	3,789	5,545	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	New	3,233.25	16	\$1,440.00	1%	3%	\$0.02	57	83	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	22,463.39	10	\$5,970.00	22%	45%	\$0.01	2,085	3,051	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	New	0.00	25	\$123,000.00	18%	25%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Lighting - Timers and Timers	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$6,570.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	New	3,622.81	5	\$11,000.00	10%	25%	\$0.12	138	226	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	256.55	15	\$329.20	100%	at stock turnover	\$0.04	79,003	77,386	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	55.67	15	\$7.63	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	232.76	6	\$7.73	100%	at stock turnover	\$0.01	0	124	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	189.44	15	\$140.77	100%	at stock turnover	\$0.03	31,323	17,658	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	826.14	7	\$9,320.00	1%	8%	\$0.08	39	39	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	Existing	12.04	7	\$200.00	1%	3%	\$1.30	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	Existing	588.21	10	\$1,300.00	1%	3%	\$0.17	8	8	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	Existing	3,082.34	15	\$13,950.00	15%	75%	\$0.35	619	619	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	1,799.77	10	\$11.52	1%	at stock turnover	\$0.00	8	7	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	Existing	645.86	10	\$35.09	4%	at stock turnover	\$0.00	11	10	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	Existing	25.27	5	\$400.00	15%	75%	\$1.05	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	2,318.02	3	\$31,750.00	5%	16%	\$0.05	271	262	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	953.23	7	\$9,320.00	1%	4%	\$0.08	13	13	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	New	13.96	7	\$10.00	1%	3%	\$0.06	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	New	0.00	13	\$0.00	72%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	New	3,094.25	15	\$13,950.00	15%	75%	\$0.35	590	590	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	1,799.77	10	\$13.30	1%	at stock turnover	\$0.00	10	9	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	New	645.86	10	\$40.53	5%	at stock turnover	\$0.00	14	13	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	New	24.33	5	\$400.00	15%	75%	\$1.06	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	8,229.31	6	\$61.75	100%	at stock turnover	\$0.00	1,568	1,656	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	Existing	609.81	4	\$2,650.00	10%	50%	\$0.32	780	863	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,620.17	6	\$40.16	100%	at stock turnover	\$0.00	309	326	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,431.38	6	\$96.78	100%	at stock turnover	\$0.01	109	115	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	1,809.51	5	\$4,000.00	10%	25%	\$0.16	880	961	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,673.80	6	\$3.52	28%	at stock turnover	\$0.00	172	182	Assumed same as Desktop
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,787.32	6	\$22.85	100%	at stock turnover	\$0.00	78	82	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	6,005.34	6	\$29.74	66%	at stock turnover	\$0.00	2,393	2,450	Assumed same as Desktop
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	8,229.31	6	\$61.75	100%	at stock turnover	\$0.00	1,663	1,641	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	New	678.91	4	\$2,650.00	10%	50%	\$0.28	696	735	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,620.17	6	\$40.16	100%	at stock turnover	\$0.00	327	323	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,431.38	6	\$96.78	100%	at stock turnover	\$0.01	116	114	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	2,032.44	5	\$4,000.00	10%	25%	\$0.14	782	826	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,673.80	6	\$4.22	34%	at stock turnover	\$0.00	203	201	Assumed same as Desktop
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,787.32	6	\$22.85	100%	at stock turnover	\$0.00	70	69	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	6,005.34	6	\$37.17	83%	at stock turnover	\$0.00	2,443	2,389	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$17,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	Existing	4,294.51	9	\$104.32	22%	at stock turnover	\$0.00	517	475	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	Existing	8,200.00	9	\$630.00	0%	10%	\$0.01	85	85	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$46,970.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$37,080.00	0%	0%	\$10.00	0	0	AEO 2013
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$10,700.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	Existing	19,812.16	10	\$1,240.35	22%	at stock turnover	\$0.00	1,983	1,730	EIA 2011
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$10,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	New	4,294.51	9	\$146.05	30%	at stock turnover	\$0.00	750	681	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	New	8,200.00	9	\$630.00	0%	10%	\$0.01	94	94	PacificCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$46,970.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$37,080.00	0%	0%	\$10.00	0	0	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$10,700.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	New	19,812.16	10	\$1,736.49	30%	at stock turnover	\$0.01	3,042	2,797	EIA 2011
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	444.14	15	\$78,000.00	45%	85%	\$0.39	70	87	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	3,900.93	15	\$31,750.00	20%	65%	\$0.04	825	981	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	798.15	18	\$150.00	15%	50%	\$0.01	134	170	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	4,449.64	50	\$250,000.00	15%	25%	\$0.61	199	279	6th Plan
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	2,770.68	45	\$126,270.00	15%	35%	\$0.08	258	310	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	-24.15	20	\$820.00	15%	50%	\$0.04	-4	-5	BEST Simulation
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	2,465.69	20	\$35,000.00	15%	50%	\$0.07	400	482	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	373.15	45	\$77,100.00	15%	35%	\$0.11	34	42	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	4,526.59	3	\$61,000.00	10%	75%	\$0.07	1,340	1,644	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,279.15	3	\$31,750.00	5%	16%	\$0.05	164	244	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	Existing	1,174.73	15	\$22,000.00	15%	25%	\$1.33	52	66	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	Existing	11,192.67	18	\$17,000.00	15%	35%	\$0.11	1,033	1,251	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	Existing	38,295.18	20	\$38,178.18	100%	at stock turnover	\$0.08	2,196	2,221	BEST Simulation
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	Existing	31,831.88	15	\$7,390.00	13%	25%	\$0.02	1,781	2,075	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	14,440.67	20	\$400,000.00	10%	15%	\$0.09	314	318	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	3,010.83	3	\$96,000.00	10%	75%	\$0.12	851	861	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	759.67	15	\$78,000.00	45%	85%	\$21.73	115	117	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	2,633.10	15	\$31,750.00	20%	65%	\$0.05	516	523	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	601.34	18	\$140.00	15%	50%	\$0.00	92	93	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	2,938.67	50	\$250,000.00	15%	25%	\$0.79	128	129	6th Plan
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	145.25	45	\$126,270.00	15%	50%	\$0.11	22	22	BEST Simulation
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	756.37	20	\$820.00	15%	50%	\$0.01	115	117	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	1,661.82	20	\$35,000.00	15%	50%	\$0.09	253	256	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	19.41	45	\$77,100.00	15%	50%	\$0.91	3	3	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	New	775.82	15	\$13,000.00	15%	25%	\$1.17	34	34	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	New	7,460.34	18	\$17,000.00	15%	35%	\$0.17	649	657	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	New	35,485.78	20	\$35,585.34	100%	at stock turnover	\$0.08	1,352	1,368	BEST Simulation
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	New	21,356.61	15	\$7,390.00	19%	25%	\$0.03	516	522	BEST Simulation
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	12,514.07	5	\$18,000.00	3%	75%	\$0.08	306	493	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	6,711.71	7	\$9,320.00	1%	8%	\$0.08	16	25	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	Existing	75,452.79	20	\$7,450.00	0%	1%	\$0.01	25	38	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	13,357.26	5	\$4,000.00	1%	10%	\$0.02	43	66	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	Existing	34,517.36	5	\$2,210.00	25%	65%	\$0.00	181	284	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	Existing	4,460.81	15	\$900.00	15%	25%	\$0.01	15	24	Hawaii TRM
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	Existing	373.72	15	\$30.00	15%	75%	\$0.01	8	12	DEER
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	8,351.62	15	\$11,410.00	16%	75%	\$0.09	171	265	BEST Simulation
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	Existing	28,833.18	20	\$83,330.00	1%	30%	\$0.18	287	451	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	Existing	116,434.35	14	\$19,887.67	53%	at stock turnover	\$0.01	3,785	3,640	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	12,009.94	5	\$18,000.00	3%	75%	\$0.08	289	479	AEG study for PN&L
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	37,913.61	20	\$400,000.00	10%	15%	\$0.09	50	70	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	10,928.30	5	\$18,000.00	6%	75%	\$0.08	200	279	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	6,103.75	7	\$9,320.00	1%	4%	\$0.08	4	6	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	New	70,915.62	20	\$7,450.00	0%	1%	\$0.01	25	34	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	12,707.95	5	\$4,000.00	0%	75%	\$0.02	254	355	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	New	32,412.84	5	\$2,210.00	25%	65%	\$0.00	130	182	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	New	4,243.72	15	\$900.00	15%	25%	\$0.01	11	16	Hawaii TRM
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	New	352.84	15	\$30.00	15%	75%	\$0.01	6	8	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	7,604.17	15	\$11,410.00	1%	75%	\$0.09	149	208	BEST Simulation
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	New	26,134.94	20	\$83,330.00	1%	30%	\$0.18	201	280	BEST Simulation
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	New	116,434.35	14	\$19,887.67	53%	at stock turnover	\$0.01	4,554	4,442	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	11,355.86	5	\$18,000.00	6%	75%	\$0.08	208	291	AEG study for PN&L
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	16,080.97	23	\$10,106.47	7%	at stock turnover	\$0.11	326	280	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	Existing	8,335.20	23	\$2,073.10	0%	at stock turnover	\$0.02	20	20	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	6,121.05	10	\$814.55	15%	75%	\$0.01	14	15	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	186.96	15	\$535.15	15%	75%	\$0.17	0	1	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	Existing	152.44	15	\$832.70	15%	75%	\$0.33	0	0	BEST Simulation
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	1,313.27	15	\$4,290.00	45%	85%	\$9.69	252	348	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	Existing	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	1,182.92	10	\$825.00	15%	35%	\$0.03	273	320	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	10,447.88	15	\$3,571.70	15%	75%	\$0.01	169	195	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,990.52	15	\$1,746.25	20%	65%	\$0.03	1,045	1,213	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	Existing	3,934.82	15	\$23,620.75	7%	at stock turnover	\$0.48	287	270	PacifiCorp Program Data
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	14,184.62	23	\$8,317.27	3%	at stock turnover	\$0.10	106	106	BEST Simulation
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	-31.46	18	\$22.00	15%	50%	\$0.08	-13	-16	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	Existing	8,165.44	10	\$6,839.80	18%	75%	\$0.06	2,072	2,682	DEER
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	3,321.99	15	\$260.15	15%	75%	\$0.02	2,377	2,699	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	2,159.58	50	\$13,750.00	15%	25%	\$0.31	237	327	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	241.82	45	\$6,944.85	15%	35%	\$0.11	54	65	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	1,957.58	45	\$3,810.40	15%	35%	\$0.08	449	530	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	1,258.58	20	\$1,925.00	15%	50%	\$0.05	508	597	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	-655.79	45	\$4,240.50	15%	35%	\$0.13	-146	-178	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	Existing	6,182.04	15	\$3,209.27	0%	at stock turnover	\$0.04	143	132	BEST Simulation
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	2,195.13	3	\$3,355.00	10%	75%	\$0.04	1,595	1,932	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	Existing	16,854.79	23	\$33,778.80	77%	at stock turnover	\$0.19	5,042	4,221	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$30,075.65	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	Existing	12,594.99	23	\$3,136.69	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$535.15	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$2,461.25	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	8,563.36	20	\$22,000.00	10%	25%	\$0.05	922	986	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	15,444.09	23	\$9,279.74	8%	at stock turnover	\$0.10	749	715	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	New	8,119.80	23	\$1,844.99	0%	at stock turnover	\$0.02	23	24	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	5,646.67	10	\$814.55	15%	75%	\$0.01	8	8	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	235.74	15	\$535.15	15%	75%	\$0.12	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$832.70	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	New	1,644.15	3	\$5,280.00	10%	75%	\$0.08	762	814	6th Plan
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	New	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	893.90	10	\$825.00	15%	50%	\$0.03	224	240	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	8,384.64	15	\$3,571.70	15%	75%	\$0.01	88	89	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	New	1,550.56	15	\$1,746.25	20%	65%	\$0.03	502	536	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	New	3,934.82	15	\$30,640.44	8%	at stock turnover	\$0.63	279	264	PacifiCorp Program Data
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	13,621.86	23	\$7,636.90	4%	at stock turnover	\$0.09	121	122	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	64.95	18	\$21.45	15%	35%	\$0.01	9	10	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	New	6,027.10	10	\$6,839.80	18%	75%	\$0.07	350	375	DEER
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	2,945.25	15	\$260.15	15%	75%	\$0.02	1,273	1,360	BEST Simulation
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	1,605.15	50	\$13,750.00	15%	25%	\$0.39	114	122	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	-44.72	45	\$6,944.85	15%	50%	\$0.22	-11	-12	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	553.16	20	\$45.10	15%	50%	\$0.01	140	149	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	1,470.14	45	\$3,810.40	15%	50%	\$0.09	369	394	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	947.37	20	\$1,925.00	15%	50%	\$0.06	238	254	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	-14.45	45	\$4,240.50	15%	50%	\$0.86	-4	-4	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	New	5,444.36	15	\$3,045.66	0%	at stock turnover	\$0.04	118	110	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	New	16,186.34	23	\$31,015.61	93%	at stock turnover	\$0.18	5,316	4,379	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$30,075.65	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	New	12,008.48	23	\$2,791.55	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$535.15	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$2,461.25	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	218.88	15	\$1,746.25	20%	65%	\$0.03	269	425	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	650.88	5	\$410.30	15%	25%	\$0.03	176	340	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	208.77	10	\$629.75	33%	60%	\$0.15	152	302	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	Existing	3,782.00	10	\$985.60	15%	30%	\$0.01	1,599	2,893	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	876.88	15	-\$28.22	100%	at stock turnover	\$0.01	78	374	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,118.01	15	\$223.53	100%	at stock turnover	\$0.01	21,278	22,452	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	181.16	15	\$121.07	100%	at stock turnover	\$0.02	2,139	2,075	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	39.31	15	\$2.81	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	214.99	3	\$3,355.00	10%	75%	\$0.04	377	603	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	150.11	6	\$2.60	100%	at stock turnover	\$0.01	0	5	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	122.17	15	\$47.28	100%	at stock turnover	\$0.02	1,214	876	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft	New	1,166.38	20	\$22,000.00	10%	25%	\$0.05	212	341	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
			Restaurant bldg.										
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	199.78	3	\$5,280.00	10%	75%	\$0.08	157	252	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	211.10	15	\$1,746.25	20%	65%	\$0.03	115	186	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	609.32	5	\$410.30	15%	25%	\$0.03	74	119	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	319.39	10	\$629.75	44%	60%	\$0.08	62	101	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	New	3,637.99	10	\$985.60	15%	30%	\$0.01	667	1,074	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	876.88	15	-\$28.22	100%	at stock turnover	\$0.01	54	258	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,118.01	15	\$223.53	100%	at stock turnover	\$0.01	14,334	15,162	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	181.16	15	\$121.07	100%	at stock turnover	\$0.02	1,446	1,413	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	39.31	15	\$2.81	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	150.11	6	\$2.60	100%	at stock turnover	\$0.01	0	3	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	122.17	15	\$47.28	100%	at stock turnover	\$0.02	778	442	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	35,639.70	15	\$289.56	53%	at stock turnover	\$0.00	3,878	3,796	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	7,264.55	10	\$172.48	9%	at stock turnover	\$0.00	771	670	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	6,157.82	18	\$1,305.23	53%	at stock turnover	\$0.02	516	513	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	13,079.59	10	\$663.03	15%	at stock turnover	\$0.00	1,597	1,388	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	35,639.70	15	\$551.44	100%	at stock turnover	\$0.00	5,586	5,459	Illinois TRM
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	7,264.55	10	\$328.48	17%	at stock turnover	\$0.00	916	829	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	6,157.82	18	\$2,485.70	100%	at stock turnover	\$0.03	639	634	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	13,079.59	10	\$1,262.69	29%	at stock turnover	\$0.01	1,896	1,717	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	1,267.38	23	\$22,481.48	7%	at stock turnover	\$0.11	23	20	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	-1,470.76	15	\$4,290.00	45%	85%	\$10.19	-45	-49	BEST Simulation
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	862.69	10	\$825.00	15%	35%	\$0.03	32	32	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	12,659.01	15	\$3,571.70	15%	75%	\$0.01	13	13	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,452.38	15	\$1,746.25	20%	65%	\$0.03	120	121	BEST Simulation
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	1,625.03	23	\$20,392.94	3%	at stock turnover	\$0.10	12	12	BEST Simulation
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	-285.77	18	\$22.00	15%	50%	\$0.09	-18	-19	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	-2,228.05	15	\$260.15	15%	75%	\$0.02	-242	-247	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	4,804.83	45	\$6,944.85	15%	35%	\$0.11	173	177	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	1,428.58	45	\$3,810.40	15%	35%	\$0.08	52	53	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	1,118.51	20	\$1,925.00	15%	50%	\$0.05	71	72	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	3,217.89	45	\$4,240.50	15%	35%	\$0.13	115	119	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	1,664.16	3	\$3,355.00	10%	75%	\$0.04	191	200	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	Existing	0.00	14	\$43,294.90	3%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	7,656.26	20	\$22,000.00	10%	25%	\$0.05	107	108	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	1,529.80	23	\$21,607.00	8%	at stock turnover	\$0.10	68	64	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	New	1,525.78	3	\$5,280.00	10%	75%	\$0.08	92	93	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	799.04	10	\$825.00	15%	50%	\$0.03	26	26	AEG research & analysis
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	12,680.05	15	\$3,571.70	15%	75%	\$0.01	6	6	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	New	1,386.47	15	\$1,746.25	20%	65%	\$0.03	58	59	BEST Simulation
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	2,065.35	23	\$18,724.75	4%	at stock turnover	\$0.09	17	17	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	-140.95	18	\$21.45	15%	35%	\$0.01	-3	-3	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	-1,915.25	15	\$260.15	15%	75%	\$0.02	-107	-108	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	2,445.56	45	\$6,944.85	15%	50%	\$0.22	80	80	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	-127.52	20	\$45.10	15%	50%	\$0.01	-4	-4	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	1,311.98	45	\$3,810.40	15%	50%	\$0.09	43	43	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	1,032.03	20	\$1,925.00	15%	50%	\$0.06	34	34	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	362.37	45	\$4,240.50	15%	50%	\$0.86	12	12	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	New	0.00	14	\$43,294.90	6%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	423.74	15	\$1,746.25	20%	65%	\$0.03	475	822	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	523.36	15	-\$16.84	100%	at stock turnover	\$0.01	26	125	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	667.27	15	\$133.41	100%	at stock turnover	\$0.01	7,079	7,469	EIA 2011
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	2,198.20	5	\$4,042.50	5%	15%	\$0.09	184	404	Illinois TRM
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	Existing	3,490.32	5	\$338.25	15%	50%	\$0.01	1,122	2,135	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	2,519.87	12	\$2,200.00	3%	25%	\$0.04	1,349	3,045	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	Existing	378.22	16	\$212.85	1%	3%	\$0.03	19	49	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	2,726.59	10	\$882.20	7%	45%	\$0.02	1,857	3,923	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	Existing	0.00	25	\$6,765.00	15%	25%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$970.75	7%	15%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	Existing	641.13	5	\$605.00	10%	25%	\$0.04	61	199	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	235.71	15	\$157.53	100%	at stock turnover	\$0.02	16,437	15,950	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	51.15	15	\$3.65	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	403.42	3	\$3,355.00	10%	75%	\$0.04	634	1,131	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	221.63	6	\$3.83	100%	at stock turnover	\$0.01	0	41	EIA 2011
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	180.38	15	\$69.81	100%	at stock turnover	\$0.02	9,619	6,939	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	1,993.29	20	\$22,000.00	10%	25%	\$0.05	387	589	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	331.93	3	\$5,280.00	10%	75%	\$0.08	278	422	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	360.77	15	\$1,746.25	20%	65%	\$0.03	211	320	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	523.36	15	-\$16.84	100%	at stock turnover	\$0.01	18	86	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	667.27	15	\$133.41	100%	at stock turnover	\$0.01	4,769	5,044	EIA 2011
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	1,820.96	5	\$4,042.50	5%	15%	\$0.10	83	120	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	New	2,853.74	5	\$338.25	15%	50%	\$0.01	462	666	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	2,082.37	12	\$2,200.00	4%	25%	\$0.05	552	839	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	New	324.87	16	\$212.85	1%	3%	\$0.03	8	13	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	2,256.86	10	\$882.20	22%	45%	\$0.02	309	471	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	New	0.00	25	\$6,765.00	18%	25%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$970.75	7%	15%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	New	463.22	5	\$605.00	10%	25%	\$0.05	27	45	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	235.71	15	\$157.53	100%	at stock turnover	\$0.02	11,112	10,861	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	51.15	15	\$3.65	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	221.63	6	\$3.83	100%	at stock turnover	\$0.01	0	26	EIA 2011
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	180.38	15	\$69.81	100%	at stock turnover	\$0.02	6,165	3,506	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
			Restaurant bldg.										
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	18.08	7	\$1,397.55	1%	4%	\$0.10	1	1	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	Existing	0.26	7	\$30.80	1%	3%	\$9.12	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	Existing	12.93	10	\$194.70	1%	3%	\$1.18	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	Existing	0.00	13	\$0.00	20%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	Existing	549.54	15	\$16,305.30	15%	75%	\$2.33	95	95	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	98.99	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	Existing	17.76	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	18.14	7	\$1,397.55	1%	2%	\$0.10	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	New	0.27	7	\$1.65	1%	3%	\$0.49	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	New	549.54	15	\$16,305.30	15%	75%	\$2.33	53	53	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	New	98.99	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	New	17.76	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$55,000.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	505.25	6	\$3.79	100%	at stock turnover	\$0.00	248	262	ENERGY STAR Calculator
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	Existing	2.24	4	\$145.75	10%	50%	\$4.79	8	9	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	79.58	6	\$1.97	100%	at stock turnover	\$0.00	39	41	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	87.88	6	\$5.94	100%	at stock turnover	\$0.01	17	18	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	6.57	5	\$220.00	10%	25%	\$2.47	9	10	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	205.53	6	\$1.54	100%	at stock turnover	\$0.00	184	195	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	219.47	6	\$2.81	100%	at stock turnover	\$0.00	25	26	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	737.41	6	\$2.77	50%	at stock turnover	\$0.00	667	680	Assumed same as Desktop
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,500.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	505.25	6	\$3.79	100%	at stock turnover	\$0.00	155	153	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	New	2.14	4	\$145.75	10%	50%	\$4.98	4	4	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	79.58	6	\$1.97	100%	at stock turnover	\$0.00	24	24	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	87.88	6	\$5.94	100%	at stock turnover	\$0.01	11	11	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	6.28	5	\$220.00	10%	25%	\$2.57	4	4	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	205.53	6	\$1.54	100%	at stock turnover	\$0.00	112	112	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	219.47	6	\$2.81	100%	at stock turnover	\$0.00	13	13	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	737.41	6	\$3.04	55%	at stock turnover	\$0.00	356	348	Assumed same as Desktop
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,631.20	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	Existing	1,749.89	9	\$191.49	97%	at stock turnover	\$0.01	877	805	EIA 2011
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	Existing	730.13	8	\$2,542.65	0%	75%	\$0.26	40	42	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	Existing	1,230.00	9	\$95.15	0%	75%	\$0.01	93	93	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	Existing	1,017.93	15	\$7,929.35	0%	75%	\$0.54	2,924	3,316	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	Existing	2,214.41	15	\$5,562.70	0%	75%	\$0.19	6,523	7,052	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	Existing	1,991.15	4	\$2,121.90	0%	75%	\$0.08	1,559	1,619	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	Existing	4,036.44	10	\$1,138.33	97%	at stock turnover	\$0.02	4,683	4,084	EIA 2011
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$1,547.15	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	New	1,749.89	9	\$196.80	100%	at stock turnover	\$0.01	384	347	EIA 2011
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	New	735.10	8	\$2,542.65	0%	75%	\$0.26	20	20	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	New	1,230.00	9	\$95.15	0%	75%	\$0.01	45	45	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	New	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	New	997.82	15	\$7,929.35	0%	75%	\$0.56	1,432	1,468	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	New	2,132.16	15	\$5,562.70	0%	75%	\$0.19	3,069	3,147	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	New	2,116.53	4	\$2,121.90	0%	75%	\$0.08	810	810	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	New	4,036.44	10	\$1,169.92	100%	at stock turnover	\$0.02	3,102	2,849	EIA 2011
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$825.00	15%	35%	\$0.00	0	0	AEG research & analysis
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	647.68	15	\$1,746.25	20%	65%	\$0.03	386	419	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	304.55	18	\$22.00	15%	50%	\$0.08	130	167	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	-181.54	15	\$260.15	15%	75%	\$0.02	-144	-157	BEST Simulation
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	701.51	50	\$13,750.00	15%	25%	\$0.31	84	111	6th Plan
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	0.00	45	\$6,944.85	15%	35%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	384.51	20	\$1,925.00	15%	50%	\$0.05	165	193	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	57.86	45	\$4,240.50	15%	35%	\$0.13	14	17	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	713.20	3	\$3,355.00	10%	75%	\$0.04	564	666	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	Existing	185.19	15	\$1,210.00	15%	25%	\$0.45	22	27	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	Existing	1,776.29	18	\$935.00	15%	35%	\$0.04	441	511	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	Existing	3,649.68	20	\$6,507.27	100%	at stock turnover	\$0.14	787	796	BEST Simulation
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	Existing	4,184.45	15	\$1,653.30	13%	50%	\$0.03	2,010	2,206	BEST Simulation
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	2,829.04	20	\$22,000.00	10%	25%	\$0.05	284	284	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	New	543.19	3	\$5,280.00	10%	75%	\$0.08	235	235	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	85%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$825.00	15%	50%	\$0.00	0	0	AEG research & analysis
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	New	512.30	15	\$1,746.25	20%	65%	\$0.03	155	155	BEST Simulation
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	259.88	18	\$21.45	15%	35%	\$0.01	35	35	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	-154.73	15	\$260.15	15%	75%	\$0.02	-62	-62	BEST Simulation
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	530.19	50	\$13,750.00	15%	25%	\$0.39	35	35	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	0.00	45	\$6,944.85	15%	50%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$45.10	15%	50%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	291.71	20	\$1,925.00	15%	50%	\$0.06	68	68	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	3.50	45	\$4,240.50	15%	50%	\$0.86	1	1	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	New	139.99	15	\$715.00	15%	25%	\$0.35	9	9	6th Plan
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	New	1,355.22	18	\$935.00	15%	35%	\$0.05	181	181	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	New	3,166.35	20	\$6,261.78	100%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	New	2,972.76	15	\$1,653.30	19%	50%	\$0.04	608	608	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,184.03	5	\$990.00	3%	75%	\$0.02	1,119	1,207	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	858.39	7	\$1,397.55	1%	4%	\$0.10	12	13	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	Existing	19,420.42	20	\$1,117.60	0%	3%	\$0.00	291	295	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,660.18	5	\$220.00	1%	10%	\$0.00	169	172	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	Existing	8,776.95	5	\$551.65	25%	65%	\$0.00	658	676	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$242.55	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	Existing	19.04	15	\$1.65	15%	75%	\$0.01	6	6	DEER
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	2,137.24	15	\$1,036.20	16%	75%	\$0.03	628	651	BEST Simulation
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	Existing	6,774.47	20	\$25,000.25	1%	30%	\$0.24	941	1,043	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	Existing	741.70	13	\$41.15	58%	at stock turnover	\$0.00	255	243	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,324.66	5	\$990.00	3%	75%	\$0.02	1,184	1,244	AEG study for PN&L
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	10,025.24	20	\$22,000.00	10%	25%	\$0.05	368	370	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,139.47	5	\$990.00	6%	75%	\$0.02	531	535	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	821.09	7	\$1,397.55	1%	2%	\$0.10	2	2	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	New	19,367.23	20	\$1,117.60	0%	4%	\$0.00	171	172	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,450.62	5	\$220.00	0%	75%	\$0.00	635	639	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	New	8,790.60	5	\$551.65	25%	65%	\$0.00	325	327	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$242.55	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	New	19.05	15	\$1.65	15%	75%	\$0.01	3	3	DEER
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	2,081.67	15	\$1,036.20	1%	75%	\$0.03	376	379	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	New	6,452.82	20	\$25,000.25	1%	30%	\$0.24	454	457	BEST Simulation
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	New	741.70	13	\$41.15	61%	at stock turnover	\$0.00	189	183	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,019.54	5	\$990.00	6%	75%	\$0.02	510	513	AEG study for PN&L
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	21,382.86	23	\$213,372.70	5%	at stock turnover	\$0.08	262	226	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft School bldg.	Existing	19,479.09	23	\$30,534.23	39%	at stock turnover	\$0.12	2,651	2,675	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	14,218.61	10	\$813.00	15%	75%	\$0.00	3,165	3,563	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	3,361.87	15	\$1,107.00	15%	75%	\$0.02	733	858	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	Existing	624.86	15	\$3,819.00	15%	75%	\$0.36	125	168	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	8,020.31	15	\$23,400.00	45%	85%	\$0.40	1,985	2,362	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Cooling	De-stratification Fans (HVLS)	per 30,000 sqft School bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	2,123.87	10	\$4,500.00	15%	35%	\$0.05	317	357	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	Existing	3,574.07	15	\$9,525.00	20%	65%	\$0.06	1,212	1,354	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	Existing	5,222.10	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	18,842.29	23	\$175,444.55	4%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	1,862.32	18	\$102.00	15%	50%	\$0.01	502	576	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	Existing	14,503.75	10	\$31,365.00	18%	75%	\$0.15	2,663	3,260	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	3,747.22	50	\$75,000.00	15%	25%	\$0.96	260	354	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	149.31	45	\$37,881.00	15%	35%	\$0.26	21	25	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	5,191.51	20	\$246.00	15%	35%	\$0.00	804	874	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	3,519.32	45	\$20,784.00	15%	35%	\$0.15	522	592	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	2,259.69	20	\$10,500.00	15%	50%	\$0.10	589	666	BEST Simulation
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	-1,261.61	45	\$23,130.00	15%	35%	\$0.13	-187	-212	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	Existing	8,206.83	15	\$36,397.78	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	Existing	3,888.47	3	\$18,300.00	10%	75%	\$0.09	1,818	2,127	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	Existing	7,028.19	23	\$42,100.99	26%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	Existing	0.00	15	\$137,916.00	15%	75%	\$10.00	0	0	DEER
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	2,826.22	3	\$9,525.00	2%	22%	\$0.07	407	582	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	Existing	36,786.43	23	\$46,199.62	10%	at stock turnover	\$0.10	151	151	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	9,745.94	10	\$813.00	15%	75%	\$0.01	496	616	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	Existing	14,456.79	4	\$813.00	15%	75%	\$0.00	726	925	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	4,541.90	15	\$1,107.00	15%	75%	\$0.02	223	296	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	Existing	664.26	15	\$5,091.00	15%	75%	\$0.43	30	46	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	12,193.94	20	\$120,000.00	10%	25%	\$0.13	366	373	AEG research & analysis

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School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	19,601.56	23	\$211,901.18	6%	at stock turnover	\$0.09	124	105	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft School bldg.	New	12,387.85	23	\$27,468.21	41%	at stock turnover	\$0.17	764	773	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	8,525.06	10	\$813.00	15%	75%	\$0.01	476	486	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	2,948.14	15	\$1,107.00	15%	75%	\$0.03	164	167	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	New	346.68	15	\$3,819.00	15%	75%	\$0.61	19	19	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	New	2,351.39	3	\$28,800.00	10%	75%	\$0.17	304	310	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	1,701.02	15	\$23,400.00	45%	85%	\$2.64	118	120	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Cooling	Destratification Fans (HVLS)	per 30,000 sqft School bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	1,324.05	10	\$4,500.00	15%	50%	\$0.07	93	95	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	New	2,237.65	15	\$9,525.00	20%	65%	\$0.07	202	206	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	New	5,222.10	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	17,300.20	23	\$174,234.61	5%	at stock turnover	\$0.08	106	106	BEST Simulation

Measure Data and Assumptions

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School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	1,054.14	18	\$102.00	15%	35%	\$0.01	42	43	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	New	8,535.32	10	\$31,365.00	18%	75%	\$0.24	155	157	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	2,291.44	50	\$75,000.00	15%	25%	\$1.56	45	46	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	-904.09	45	\$37,881.00	15%	50%	\$0.54	-63	-64	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	2,938.69	20	\$246.00	15%	50%	\$0.01	207	211	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	2,121.45	45	\$20,784.00	15%	50%	\$0.18	148	151	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	1,403.23	20	\$10,500.00	15%	50%	\$0.12	98	100	BEST Simulation
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	-20.70	45	\$23,130.00	15%	50%	\$0.98	-1	-1	BEST Simulation
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	New	7,343.46	15	\$36,342.82	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	New	6,446.14	23	\$41,810.64	29%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	New	0.00	15	\$137,916.00	15%	75%	\$10.00	0	0	DEER

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School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	New	1,817.50	3	\$9,525.00	2%	22%	\$0.09	95	97	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	New	26,423.61	23	\$41,560.59	10%	at stock turnover	\$0.12	49	49	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	5,284.13	10	\$813.00	15%	75%	\$0.01	73	74	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	New	7,901.15	4	\$813.00	15%	75%	\$0.01	108	110	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	3,662.30	15	\$1,107.00	15%	75%	\$0.02	50	51	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	New	354.68	15	\$5,091.00	15%	75%	\$0.82	5	5	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	323.58	15	\$9,525.00	20%	65%	\$0.06	289	441	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	858.25	5	\$13,092.00	15%	25%	\$0.81	159	323	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	679.10	10	\$3,381.00	33%	60%	\$0.27	349	697	AEG research & analysis
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	Existing	5,131.59	10	\$5,292.00	15%	30%	\$0.06	1,511	2,805	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	315.73	15	-\$22.17	100%	at stock turnover	\$0.01	13	46	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	402.56	15	\$175.60	100%	at stock turnover	\$0.02	3,420	3,460	EIA 2011
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	101.99	15	\$46.83	100%	at stock turnover	\$0.04	10,582	10,202	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	23.26	15	\$3.62	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	295.31	3	\$18,300.00	10%	75%	\$0.09	365	582	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	94.63	6	\$3.57	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	77.02	15	\$65.04	100%	at stock turnover	\$0.04	51	35	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	257.50	3	\$9,525.00	2%	22%	\$0.07	98	217	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	1,448.66	20	\$120,000.00	10%	25%	\$0.13	91	136	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	New	247.24	3	\$28,800.00	10%	75%	\$0.17	67	100	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	282.72	15	\$9,525.00	20%	65%	\$0.07	54	80	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	New	727.31	5	\$13,092.00	15%	25%	\$0.84	30	45	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	665.48	10	\$3,381.00	44%	60%	\$0.25	45	67	AEG research & analysis
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	New	4,462.04	10	\$5,292.00	15%	30%	\$0.06	282	422	AEG research & analysis
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	315.73	15	-\$22.17	100%	at stock turnover	\$0.01	4	15	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	402.56	15	\$175.60	100%	at stock turnover	\$0.02	988	1,001	EIA 2011
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	101.99	15	\$46.83	100%	at stock turnover	\$0.04	3,156	3,057	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	23.26	15	\$3.62	100%	at stock turnover	\$0.00	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	94.63	6	\$3.57	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	77.02	15	\$65.04	100%	at stock turnover	\$0.04	14	8	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	218.38	3	\$9,525.00	2%	22%	\$0.09	24	36	BEST Simulation
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	Existing	4,632.39	15	\$29.00	52%	at stock turnover	\$0.00	273	267	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	472.12	10	\$73.81	59%	at stock turnover	\$0.01	232	201	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	Existing	800.38	18	\$130.74	52%	at stock turnover	\$0.01	36	36	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	Existing	850.03	10	\$183.70	65%	at stock turnover	\$0.02	311	270	Developed from RTF "ComCookingConvectionOven" v2.0
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	New	4,632.39	15	\$40.60	73%	at stock turnover	\$0.00	127	124	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	New	472.12	10	\$103.33	82%	at stock turnover	\$0.02	90	81	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	New	800.38	18	\$183.03	73%	at stock turnover	\$0.02	14	14	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	New	850.03	10	\$257.18	91%	at stock turnover	\$0.02	120	109	Developed from RTF "ComCookingConvectionOven" v2.0
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	9,010.86	23	\$31,276.02	5%	at stock turnover	\$0.08	99	85	BEST Simulation
School	Heating	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	-4,824.43	15	\$23,400.00	45%	85%	\$0.40	-246	-268	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	4,020.66	10	\$4,500.00	15%	35%	\$0.05	123	128	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	65,653.35	15	\$3,573.00	15%	25%	\$0.00	580	580	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	Existing	6,768.16	15	\$9,525.00	20%	65%	\$0.06	469	484	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	13,342.54	23	\$29,634.04	4%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	-961.69	18	\$102.00	15%	50%	\$0.01	-52	-55	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	10,411.48	45	\$37,881.00	15%	35%	\$0.27	310	331	BEST Simulation
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	-1,373.09	20	\$246.00	15%	35%	\$0.00	-42	-44	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	6,576.64	45	\$20,784.00	15%	35%	\$0.15	197	209	BPA
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	5,213.10	20	\$10,500.00	15%	50%	\$0.10	277	290	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	15,259.24	45	\$23,130.00	15%	35%	\$0.13	461	485	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	Existing	7,748.38	3	\$18,300.00	10%	75%	\$0.09	746	801	6th Plan
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	Existing	0.00	14	\$100,242.00	3%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	5,670.52	3	\$9,525.00	2%	22%	\$0.07	169	193	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	33,958.18	20	\$120,000.00	10%	25%	\$0.13	181	182	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	8,786.97	23	\$32,026.29	6%	at stock turnover	\$0.09	46	39	BEST Simulation
School	Heating	Commissioning	per 30,000 sqft School bldg.	New	6,885.52	3	\$28,800.00	10%	75%	\$0.17	158	160	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	-1,366.08	15	\$23,400.00	45%	85%	\$2.64	-17	-17	BEST Simulation
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	3,693.13	10	\$4,500.00	15%	50%	\$0.07	46	46	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	65,594.86	15	\$3,573.00	15%	25%	\$0.00	120	120	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	New	6,241.85	15	\$9,525.00	20%	65%	\$0.07	100	101	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	12,529.21	23	\$29,429.71	5%	at stock turnover	\$0.08	71	71	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	-890.86	18	\$102.00	15%	35%	\$0.01	-6	-6	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	6,034.60	45	\$37,881.00	15%	50%	\$0.54	75	75	BEST Simulation
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	-1,153.56	20	\$246.00	15%	50%	\$0.01	-14	-14	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	5,907.12	45	\$20,784.00	15%	50%	\$0.18	73	74	BPA

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	4,770.01	20	\$10,500.00	15%	50%	\$0.12	59	60	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	1,635.39	45	\$23,130.00	15%	50%	\$0.98	20	20	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	New	0.00	14	\$100,242.00	6%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	New	5,060.51	3	\$9,525.00	2%	22%	\$0.09	47	47	BEST Simulation
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	945.25	15	\$9,525.00	20%	65%	\$0.05	786	1,289	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	801.00	15	-\$56.24	100%	at stock turnover	\$0.01	32	116	EIA 2011
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,021.26	15	\$445.49	100%	at stock turnover	\$0.02	8,708	8,809	EIA 2011
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	6,401.59	5	\$9,696.00	5%	15%	\$0.08	387	816	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	Existing	10,051.62	5	\$438.00	15%	50%	\$0.00	2,299	4,286	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	5,623.56	12	\$12,000.00	3%	25%	\$0.11	2,233	4,648	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	Existing	851.28	16	\$276.00	1%	3%	\$0.02	31	73	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	6,095.57	10	\$1,140.00	7%	45%	\$0.01	3,075	5,993	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 30,000 sqft School bldg.	Existing	0.00	8	\$1,278.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	Existing	368.52	5	\$3,300.00	10%	25%	\$0.35	21	84	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	284.40	15	\$130.60	100%	at stock turnover	\$0.04	33,476	32,274	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	64.85	15	\$10.11	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	889.09	3	\$18,300.00	10%	75%	\$0.09	1,034	1,751	6th Plan
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	323.51	6	\$12.21	100%	at stock turnover	\$0.01	0	12	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	263.30	15	\$222.33	100%	at stock turnover	\$0.04	3,301	2,308	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	775.21	3	\$9,525.00	2%	22%	\$0.07	277	718	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	4,609.48	20	\$120,000.00	10%	25%	\$0.13	287	433	AEG research & analysis
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	New	762.27	3	\$28,800.00	10%	75%	\$0.17	205	308	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	834.38	15	\$9,525.00	20%	65%	\$0.07	156	235	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	801.00	15	-\$56.24	100%	at stock turnover	\$0.01	10	37	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,021.26	15	\$445.49	100%	at stock turnover	\$0.02	2,517	2,548	EIA 2011
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	New	5,480.56	5	\$9,696.00	5%	15%	\$0.08	77	114	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	New	8,592.48	5	\$438.00	15%	50%	\$0.00	425	633	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	4,814.50	12	\$12,000.00	4%	25%	\$0.12	409	617	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	New	751.35	16	\$276.00	1%	3%	\$0.02	6	9	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	New	5,221.27	10	\$1,140.00	22%	45%	\$0.01	230	346	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft School bldg.	New	0.00	8	\$1,278.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	New	221.86	5	\$3,300.00	10%	25%	\$0.55	4	7	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	284.40	15	\$130.60	100%	at stock turnover	\$0.04	9,984	9,673	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	64.85	15	\$10.11	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	323.51	6	\$12.21	100%	at stock turnover	\$0.01	0	5	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	263.30	15	\$222.33	100%	at stock turnover	\$0.04	938	543	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	664.63	3	\$9,525.00	2%	22%	\$0.09	72	108	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	290.27	7	\$1,398.00	1%	4%	\$0.10	10	10	Developed from RTF
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	Existing	4.22	7	\$30.00	1%	3%	\$0.55	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	Existing	207.60	10	\$195.00	1%	3%	\$0.07	5	5	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	Existing	0.00	13	\$0.00	44%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	Existing	473.04	15	\$96.00	15%	75%	\$0.02	125	125	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	Existing	619.07	10	\$3.96	1%	at stock turnover	\$0.00	5	4	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	Existing	444.31	10	\$36.21	6%	at stock turnover	\$0.01	21	19	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	Existing	17.33	5	\$60.00	15%	75%	\$0.23	0	1	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	524.06	3	\$9,525.00	2%	22%	\$0.07	186	180	BEST Simulation
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	290.30	7	\$1,398.00	1%	2%	\$0.10	1	1	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	New	4.25	7	\$3.00	1%	3%	\$0.06	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	New	473.04	15	\$96.00	15%	75%	\$0.02	28	28	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	New	619.07	10	\$4.75	1%	at stock turnover	\$0.00	2	2	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	New	444.31	10	\$43.45	7%	at stock turnover	\$0.01	7	7	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	New	16.68	5	\$60.00	15%	75%	\$0.23	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	New	509.29	3	\$9,525.00	2%	22%	\$0.09	51	50	BEST Simulation
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	2,810.70	6	\$21.09	100%	at stock turnover	\$0.00	968	1,022	ENERGY STAR Calculator

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School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	Existing	470.37	4	\$795.00	10%	50%	\$0.12	1,098	1,278	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	Existing	221.35	6	\$5.49	100%	at stock turnover	\$0.00	76	80	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	Existing	488.89	6	\$33.05	100%	at stock turnover	\$0.01	67	71	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	Existing	1,436.79	5	\$1,200.00	10%	25%	\$0.06	1,315	1,468	5th Plan
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	Existing	114.34	6	\$0.31	36%	at stock turnover	\$0.00	27	28	Assumed same as Desktop
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	Existing	610.45	6	\$7.80	100%	at stock turnover	\$0.00	48	50	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	Existing	820.44	6	\$6.16	100%	at stock turnover	\$0.00	739	761	Assumed same as Desktop
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	New	2,810.70	6	\$21.09	100%	at stock turnover	\$0.00	268	267	ENERGY STAR Calculator
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	New	447.21	4	\$795.00	10%	50%	\$0.12	221	236	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	New	221.35	6	\$5.49	100%	at stock turnover	\$0.00	21	21	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	New	488.89	6	\$33.05	100%	at stock turnover	\$0.01	19	19	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	New	1,393.02	5	\$1,200.00	10%	25%	\$0.06	260	277	5th Plan
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	New	114.34	6	\$0.31	36%	at stock turnover	\$0.00	7	7	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	New	610.45	6	\$7.80	100%	at stock turnover	\$0.00	11	11	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	New	820.44	6	\$6.16	100%	at stock turnover	\$0.00	179	177	Assumed same as Desktop
School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	Existing	594.29	9	\$43.91	66%	at stock turnover	\$0.01	132	121	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	Existing	1,615.24	8	\$2,544.00	0%	25%	\$0.12	267	269	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	Existing	1,230.00	9	\$96.00	0%	25%	\$0.01	102	102	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	Existing	200.46	15	\$315.00	0%	25%	\$0.12	151	165	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	Existing	393.64	15	\$5,562.00	0%	25%	\$1.02	295	327	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	Existing	348.97	4	\$4,524.00	0%	25%	\$0.99	17	17	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	Existing	1,370.85	10	\$261.04	66%	at stock turnover	\$0.01	754	658	EIA 2011
School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	New	594.29	9	\$61.48	92%	at stock turnover	\$0.01	75	68	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	New	1,616.24	8	\$2,544.00	0%	25%	\$0.12	78	78	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	New	1,230.00	9	\$96.00	0%	25%	\$0.01	30	30	PacificCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	New	196.81	15	\$315.00	0%	25%	\$0.12	44	45	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	New	386.94	15	\$5,562.00	0%	25%	\$1.04	86	89	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	New	349.43	4	\$4,524.00	0%	25%	\$0.99	5	5	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	New	1,370.85	10	\$365.46	92%	at stock turnover	\$0.02	301	277	EIA 2011
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	Existing	839.13	15	\$9,525.00	20%	65%	\$0.06	284	381	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	459.07	18	\$102.00	15%	50%	\$0.01	130	183	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	959.65	50	\$75,000.00	15%	25%	\$0.96	69	115	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	532.20	20	\$10,500.00	15%	50%	\$0.10	139	188	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	80.56	45	\$23,130.00	15%	35%	\$0.12	12	16	BEST Simulation
School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	Existing	974.73	3	\$18,300.00	10%	75%	\$0.09	463	640	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	708.29	3	\$9,525.00	2%	22%	\$0.07	103	190	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	Existing	253.38	15	\$6,600.00	15%	75%	\$1.78	109	154	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	Existing	2,416.36	18	\$5,100.00	15%	35%	\$0.15	358	488	DEER
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	Existing	12,230.45	20	\$21,499.95	100%	at stock turnover	\$0.14	488	493	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	Existing	7,142.69	15	\$3,828.00	13%	50%	\$0.04	2,115	2,645	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	3,041.76	20	\$120,000.00	10%	25%	\$0.13	94	95	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	New	619.30	3	\$28,800.00	10%	75%	\$0.17	83	83	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	0.00	15	\$23,400.00	45%	85%	\$0.00	0	0	BEST Simulation
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	New	554.60	15	\$9,525.00	20%	65%	\$0.07	52	52	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	307.72	18	\$102.00	15%	35%	\$0.01	13	13	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	604.47	50	\$75,000.00	15%	25%	\$1.56	12	13	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	0.00	45	\$37,881.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	350.04	20	\$10,500.00	15%	50%	\$0.12	25	25	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	4.01	45	\$23,130.00	15%	50%	\$0.98	0	0	BEST Simulation
School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	New	450.06	3	\$9,525.00	2%	22%	\$0.09	24	24	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	New	159.60	15	\$3,900.00	15%	75%	\$1.58	20	20	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	New	1,545.17	18	\$5,100.00	15%	35%	\$0.23	64	64	DEER
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	New	12,381.98	20	\$21,495.93	100%	at stock turnover	\$0.14	51	52	BEST Simulation
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	New	4,798.55	15	\$3,828.00	19%	50%	\$0.06	305	306	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,451.93	5	\$5,400.00	3%	75%	\$0.14	643	719	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	673.03	7	\$1,398.00	1%	4%	\$0.10	7	8	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	Existing	15,824.63	20	\$1,116.00	1%	9%	\$0.01	479	484	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	Existing	2,734.40	5	\$1,200.00	1%	10%	\$0.03	95	99	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	Existing	7,060.35	5	\$993.00	25%	65%	\$0.01	401	417	DEER
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	Existing	978.93	15	\$66.00	15%	25%	\$0.01	37	38	Hawaii TRM
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	Existing	77.68	15	\$9.00	15%	75%	\$0.01	18	18	DEER
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	Existing	1,710.39	15	\$2,421.00	16%	75%	\$0.10	380	398	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	Existing	5,913.78	20	\$12,501.00	1%	30%	\$0.15	639	678	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	Existing	602.84	13	\$56.38	50%	at stock turnover	\$0.01	158	150	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,559.16	5	\$5,400.00	3%	75%	\$0.14	681	741	AEG study for PN&L
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	8,007.64	20	\$120,000.00	10%	25%	\$0.13	94	95	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,418.54	5	\$5,400.00	6%	75%	\$0.14	131	132	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	638.77	7	\$1,398.00	1%	2%	\$0.10	0	0	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	New	15,782.48	20	\$1,116.00	1%	11%	\$0.01	119	120	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	New	2,755.87	5	\$1,200.00	0%	75%	\$0.03	163	164	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	New	7,020.27	5	\$993.00	25%	65%	\$0.01	83	84	DEER
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	New	973.20	15	\$66.00	15%	25%	\$0.01	8	8	Hawaii TRM
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	New	77.59	15	\$9.00	15%	75%	\$0.01	4	4	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	New	1,660.60	15	\$2,421.00	1%	75%	\$0.10	96	97	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	New	5,574.54	20	\$12,501.00	1%	30%	\$0.15	127	127	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	New	602.84	13	\$56.38	50%	at stock turnover	\$0.01	49	48	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,326.48	5	\$5,400.00	6%	75%	\$0.14	126	127	AEG study for PN&L
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	23,588.71	23	\$29,799.69	11%	at stock turnover	\$0.10	2,640	2,271	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,192.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$772.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	5,928.98	15	\$7,800.00	45%	85%	\$0.26	9,805	12,188	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	1,756.55	10	\$1,500.00	15%	35%	\$0.03	1,752	2,063	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	15,515.72	15	\$3,572.00	15%	75%	\$0.01	226	262	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	2,955.75	15	\$3,175.00	20%	65%	\$0.03	6,698	7,812	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	Existing	5,770.63	15	\$10,506.87	0%	at stock turnover	\$0.15	588	553	PacifiCorp Program Data
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	270.93	18	\$20.00	15%	50%	\$0.00	489	595	BEST Simulation
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	Existing	12,057.96	10	\$6,339.00	18%	75%	\$0.04	13,955	17,877	DEER
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	4,932.77	15	\$260.00	15%	75%	\$0.04	15,226	17,384	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	3,131.24	50	\$25,000.00	15%	25%	\$0.42	1,454	2,078	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	1,513.99	45	\$12,627.00	15%	35%	\$0.07	1,464	1,778	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	1,002.30	20	\$82.00	15%	35%	\$0.02	1,033	1,177	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	2,713.16	45	\$6,928.00	15%	35%	\$0.09	2,617	3,187	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	1,748.59	20	\$3,500.00	15%	50%	\$0.06	2,973	3,595	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	-970.06	45	\$7,710.00	15%	35%	\$0.11	-932	-1,140	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	Existing	9,066.30	15	\$4,706.58	1%	at stock turnover	\$0.04	356	329	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	3,234.78	3	\$6,100.00	10%	75%	\$0.06	10,109	12,350	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	Existing	24,718.65	23	\$99,599.29	72%	at stock turnover	\$0.38	33,605	28,134	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$27,874.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	2,343.33	3	\$3,175.00	3%	14%	\$0.04	1,240	1,839	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Office bldg.	Existing	19,341.76	23	\$7,165.73	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,192.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$10,079.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	10,017.71	20	\$40,000.00	10%	25%	\$0.09	5,575	5,977	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	New	19,427.34	23	\$25,315.11	13%	at stock turnover	\$0.10	2,930	2,492	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation

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Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,192.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$772.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	New	2,061.52	3	\$9,600.00	10%	75%	\$0.11	4,958	5,316	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	1,240.93	15	\$7,800.00	45%	85%	\$4.96	1,604	1,720	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	De-stratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	1,199.26	10	\$1,500.00	15%	50%	\$0.04	1,568	1,681	AEG research & analysis
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	12,682.57	15	\$3,572.00	15%	75%	\$0.01	134	137	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	New	2,026.79	15	\$3,175.00	20%	65%	\$0.04	3,411	3,656	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	New	5,770.63	15	\$13,629.33	0%	at stock turnover	\$0.19	646	610	PacifiCorp Program Data
Small Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	17,135.07	23	\$20,832.47	12%	at stock turnover	\$0.05	2,467	2,474	BEST Simulation
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	481.05	18	\$20.00	15%	35%	\$0.01	360	386	BEST Simulation
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	New	7,823.89	10	\$6,339.00	18%	75%	\$0.05	2,513	2,687	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	3,644.58	15	\$260.00	15%	75%	\$0.06	8,168	8,755	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	2,012.62	50	\$25,000.00	15%	25%	\$0.62	743	797	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	-6.21	45	\$12,627.00	15%	50%	\$0.09	-8	-9	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	1,743.06	45	\$6,928.00	15%	50%	\$0.11	2,259	2,422	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	1,228.02	20	\$3,500.00	15%	50%	\$0.07	1,602	1,717	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	-18.11	45	\$7,710.00	15%	50%	\$0.82	-23	-25	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	New	7,984.45	15	\$4,466.62	1%	at stock turnover	\$0.04	365	340	BEST Simulation
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	New	20,210.10	23	\$84,610.54	86%	at stock turnover	\$0.39	36,918	30,474	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	New	0.00	15	\$27,874.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	1,493.41	3	\$3,175.00	3%	14%	\$0.06	795	852	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER

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Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,192.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$10,079.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	69.85	15	\$3,175.00	20%	65%	\$0.03	405	624	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	191.96	5	\$244.00	15%	25%	\$0.06	237	472	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	47.70	10	\$609.00	33%	60%	\$0.64	159	324	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	Existing	1,107.89	10	\$953.00	15%	30%	\$0.05	2,121	4,004	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	558.60	15	-\$26.96	100%	at stock turnover	\$0.01	61	231	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	712.20	15	\$213.59	100%	at stock turnover	\$0.01	16,494	16,800	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	205.88	15	\$206.39	100%	at stock turnover	\$0.03	3,132	3,039	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	44.68	15	\$4.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	63.42	3	\$6,100.00	10%	75%	\$0.06	507	819	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	153.60	6	\$3.99	100%	at stock turnover	\$0.01	0	28	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	125.01	15	\$72.58	100%	at stock turnover	\$0.03	7,794	5,456	EIA 2011
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	55.62	3	\$3,175.00	3%	14%	\$0.04	76	173	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	330.50	20	\$40,000.00	10%	25%	\$0.09	327	505	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	56.83	3	\$9,600.00	10%	75%	\$0.11	243	375	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	64.44	15	\$3,175.00	20%	65%	\$0.04	193	297	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	172.64	5	\$244.00	15%	25%	\$0.06	114	175	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	50.63	10	\$609.00	44%	60%	\$0.49	54	83	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	New	1,017.14	10	\$953.00	15%	30%	\$0.04	1,014	1,563	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	558.60	15	-\$26.96	100%	at stock turnover	\$0.01	46	176	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	712.20	15	\$213.59	100%	at stock turnover	\$0.01	12,556	12,841	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	205.88	15	\$206.39	100%	at stock turnover	\$0.03	2,389	2,336	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	44.68	15	\$4.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	153.60	6	\$3.99	100%	at stock turnover	\$0.01	0	25	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	125.01	15	\$72.58	100%	at stock turnover	\$0.03	5,629	3,206	EIA 2011
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	49.39	3	\$3,175.00	3%	14%	\$0.06	47	72	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	3,844.50	15	\$1.48	4%	at stock turnover	\$0.00	91	89	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	391.82	10	\$1.57	4%	at stock turnover	\$0.00	32	28	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	664.25	18	\$6.66	4%	at stock turnover	\$0.00	12	12	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	705.46	10	\$3.53	4%	at stock turnover	\$0.00	39	34	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	3,844.50	15	\$1.85	5%	at stock turnover	\$0.00	97	95	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	391.82	10	\$1.96	5%	at stock turnover	\$0.00	28	26	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	664.25	18	\$8.32	5%	at stock turnover	\$0.00	11	11	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	705.46	10	\$4.41	5%	at stock turnover	\$0.00	34	31	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	1,491.67	23	\$31,403.62	11%	at stock turnover	\$0.10	139	120	BEST Simulation
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	-4,066.75	15	\$7,800.00	45%	85%	\$0.26	-2,029	-2,244	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	1,551.62	10	\$1,500.00	15%	35%	\$0.03	468	489	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	23,842.04	15	\$3,572.00	15%	75%	\$0.01	6,605	6,604	Developed from RTF
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	2,611.69	15	\$3,175.00	20%	65%	\$0.03	1,789	1,853	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	Existing	6,747.00	23	\$14,985.23	10%	at stock turnover	\$0.04	635	636	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	-61.43	18	\$20.00	15%	50%	\$0.00	-33	-34	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	-4,008.17	15	\$260.00	15%	75%	\$0.04	-3,593	-3,791	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	10,255.89	45	\$12,627.00	15%	35%	\$0.07	3,068	3,234	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	-737.89	20	\$82.00	15%	35%	\$0.02	-220	-233	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	2,519.46	45	\$6,928.00	15%	35%	\$0.09	741	794	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	2,011.84	20	\$3,500.00	15%	50%	\$0.06	1,059	1,110	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	5,761.94	45	\$7,710.00	15%	35%	\$0.11	1,688	1,817	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	2,969.13	3	\$6,100.00	10%	75%	\$0.06	2,798	3,042	6th Plan
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	Existing	0.00	14	\$44,745.00	3%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	2,150.94	3	\$3,175.00	3%	14%	\$0.04	343	421	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	12,436.95	20	\$40,000.00	10%	25%	\$0.09	1,641	1,657	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	New	2,558.95	3	\$9,600.00	10%	75%	\$0.11	1,460	1,473	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	-1,290.72	15	\$7,800.00	45%	85%	\$4.96	-396	-399	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	1,377.31	10	\$1,500.00	15%	50%	\$0.04	425	429	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	23,863.97	15	\$3,572.00	15%	75%	\$0.01	3,477	3,477	Developed from RTF
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	New	2,327.67	15	\$3,175.00	20%	65%	\$0.04	924	933	BEST Simulation
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	6,335.73	23	\$14,881.90	12%	at stock turnover	\$0.05	842	844	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	-485.90	18	\$20.00	15%	35%	\$0.01	-86	-87	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	-3,233.26	15	\$260.00	15%	75%	\$0.06	-1,710	-1,725	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	9,282.37	45	\$12,627.00	15%	50%	\$0.09	2,866	2,892	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	2,163.78	45	\$6,928.00	15%	50%	\$0.11	665	671	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	1,825.36	20	\$3,500.00	15%	50%	\$0.07	564	569	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	607.86	45	\$7,710.00	15%	50%	\$0.82	186	188	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	New	0.00	14	\$44,745.00	6%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	1,853.79	3	\$3,175.00	3%	14%	\$0.06	234	236	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	398.37	15	\$3,175.00	20%	65%	\$0.03	2,206	3,561	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	543.34	15	-\$26.23	100%	at stock turnover	\$0.01	118	448	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	692.75	15	\$207.76	100%	at stock turnover	\$0.01	31,957	32,549	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	2,348.08	5	\$6,392.00	5%	15%	\$0.14	923	1,969	Illinois TRM
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	Existing	3,746.89	5	\$453.00	15%	50%	\$0.01	5,666	10,453	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	2,368.35	12	\$4,000.00	3%	25%	\$0.09	6,262	12,764	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	Existing	355.49	16	\$285.00	1%	3%	\$0.04	87	198	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	2,568.06	10	\$1,182.00	7%	45%	\$0.03	8,624	16,462	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	Existing	275.16	5	\$1,100.00	10%	25%	\$0.16	135	378	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	210.06	15	\$210.58	100%	at stock turnover	\$0.03	83,690	81,210	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	45.58	15	\$4.88	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	378.14	3	\$6,100.00	10%	75%	\$0.06	2,938	4,882	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	170.67	6	\$4.43	100%	at stock turnover	\$0.01	0	80	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	138.90	15	\$80.64	100%	at stock turnover	\$0.03	22,294	15,607	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	328.70	3	\$3,175.00	3%	14%	\$0.04	432	1,076	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	1,967.26	20	\$40,000.00	10%	25%	\$0.09	2,043	3,021	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	326.41	3	\$9,600.00	10%	75%	\$0.11	1,459	2,157	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	356.08	15	\$3,175.00	20%	65%	\$0.04	1,111	1,642	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	543.34	15	-\$26.23	100%	at stock turnover	\$0.01	89	340	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	692.75	15	\$207.76	100%	at stock turnover	\$0.01	24,327	24,879	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	2,002.40	5	\$6,392.00	5%	15%	\$0.15	474	681	Illinois TRM
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	New	3,149.75	5	\$453.00	15%	50%	\$0.01	2,647	3,804	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	2,054.98	12	\$4,000.00	4%	25%	\$0.09	2,911	4,304	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	New	320.64	16	\$285.00	1%	3%	\$0.04	44	66	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	2,227.85	10	\$1,182.00	22%	45%	\$0.03	1,632	2,413	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 10,000 sqft Small Office bldg.	New	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	New	232.67	5	\$1,100.00	10%	25%	\$0.18	69	116	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	210.06	15	\$210.58	100%	at stock turnover	\$0.03	63,830	62,417	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	45.58	15	\$4.88	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	170.67	6	\$4.43	100%	at stock turnover	\$0.01	0	70	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	138.90	15	\$80.64	100%	at stock turnover	\$0.03	16,102	9,171	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	285.75	3	\$3,175.00	3%	14%	\$0.06	283	418	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	70.45	7	\$1,397.00	1%	4%	\$0.08	17	17	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	Existing	1.03	7	\$31.00	1%	3%	\$2.35	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	Existing	50.37	10	\$195.00	1%	3%	\$0.30	8	8	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	Existing	356.32	15	\$3,772.00	15%	75%	\$0.83	311	311	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	Existing	179.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	Existing	32.29	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	387.10	3	\$3,175.00	3%	14%	\$0.04	410	403	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	80.75	7	\$1,397.00	1%	2%	\$0.08	3	3	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	New	1.18	7	\$2.00	1%	3%	\$0.13	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	New	356.32	15	\$3,772.00	15%	75%	\$0.83	180	180	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	New	179.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	New	32.29	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	382.51	3	\$3,175.00	3%	14%	\$0.06	283	280	BEST Simulation
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,096.42	6	\$30.74	100%	at stock turnover	\$0.00	9,252	9,767	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	Existing	107.60	4	\$265.00	10%	50%	\$0.18	1,671	1,876	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	806.49	6	\$19.99	100%	at stock turnover	\$0.00	1,821	1,923	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	712.52	6	\$48.18	100%	at stock turnover	\$0.01	644	680	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	316.76	5	\$400.00	10%	25%	\$0.09	1,855	2,072	5th Plan
Small Office	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	416.60	6	\$0.63	20%	at stock turnover	\$0.00	373	394	Assumed same as Desktop
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	1,494.68	6	\$11.22	100%	at stock turnover	\$0.00	8,831	9,092	Assumed same as Desktop
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,096.42	6	\$30.74	100%	at stock turnover	\$0.00	6,512	6,447	ENERGY STAR Calculator
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	New	118.12	4	\$265.00	10%	50%	\$0.16	955	1,018	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	806.49	6	\$19.99	100%	at stock turnover	\$0.00	1,282	1,269	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	712.52	6	\$48.18	100%	at stock turnover	\$0.01	453	449	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	348.96	5	\$400.00	10%	25%	\$0.08	1,058	1,128	5th Plan
Small Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,112.12	6	\$14.22	100%	at stock turnover	\$0.00	343	338	ENERGY STAR Calculator
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,494.68	6	\$11.22	100%	at stock turnover	\$0.00	5,443	5,347	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	Existing	204.95	9	\$1.18	5%	at stock turnover	\$0.00	24	22	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	Existing	1,230.00	9	\$95.00	0%	10%	\$0.01	129	129	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$7,993.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$5,563.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$3,274.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	Existing	472.76	10	\$6.99	5%	at stock turnover	\$0.00	132	115	EIA 2011
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	New	0.00	5	\$1,547.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	New	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	New	204.95	9	\$1.41	6%	at stock turnover	\$0.00	29	26	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	New	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	New	1,230.00	9	\$95.00	0%	10%	\$0.01	81	81	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	New	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	New	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,993.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	New	0.00	15	\$5,563.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	New	0.00	4	\$3,274.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	New	472.76	10	\$8.39	6%	at stock turnover	\$0.00	115	106	EIA 2011
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	69.88	15	\$7,800.00	45%	85%	\$0.26	124	162	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	514.57	15	\$3,175.00	20%	65%	\$0.03	1,233	1,533	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	288.71	18	\$20.00	15%	50%	\$0.00	549	744	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	-147.10	15	\$260.00	15%	75%	\$0.04	-478	-584	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	588.50	50	\$25,000.00	15%	25%	\$0.42	298	446	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	108.13	45	\$12,627.00	15%	35%	\$0.07	113	143	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	53.26	20	\$82.00	15%	35%	\$0.02	58	71	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	326.27	20	\$3,500.00	15%	50%	\$0.06	602	756	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	48.75	45	\$7,710.00	15%	35%	\$0.11	50	65	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	598.62	3	\$6,100.00	10%	75%	\$0.06	2,011	2,576	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	433.65	3	\$3,175.00	3%	14%	\$0.04	247	395	BEST Simulation
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	Existing	155.37	15	\$2,200.00	15%	25%	\$1.00	79	103	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	Existing	1,480.48	18	\$1,700.00	15%	35%	\$0.08	1,551	1,960	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	Existing	6,439.18	20	\$6,895.92	100%	at stock turnover	\$0.08	5,031	5,087	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	Existing	4,197.80	15	\$1,709.00	13%	25%	\$0.03	2,662	3,242	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	1,853.93	20	\$40,000.00	10%	25%	\$0.09	929	964	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	New	378.64	3	\$9,600.00	10%	75%	\$0.11	820	850	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	54.98	15	\$7,800.00	45%	85%	\$4.96	64	66	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	New	342.26	15	\$3,175.00	20%	65%	\$0.04	515	535	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	200.86	18	\$20.00	15%	35%	\$0.01	134	140	BEST Simulation
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	-101.12	15	\$260.00	15%	75%	\$0.06	-203	-210	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	369.59	50	\$25,000.00	15%	25%	\$0.62	123	128	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	132.45	45	\$12,627.00	15%	50%	\$0.09	155	161	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	214.26	20	\$3,500.00	15%	50%	\$0.07	251	260	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	2.44	45	\$7,710.00	15%	50%	\$0.82	3	3	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	274.30	3	\$3,175.00	3%	14%	\$0.06	131	136	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	New	97.57	15	\$1,300.00	15%	25%	\$0.87	32	34	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	New	941.75	18	\$1,700.00	15%	35%	\$0.12	628	652	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	New	5,787.11	20	\$6,753.11	100%	at stock turnover	\$0.09	4,162	4,214	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	New	2,700.18	15	\$1,709.00	19%	25%	\$0.05	500	519	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	689.66	5	\$1,800.00	3%	75%	\$0.16	675	1,077	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	1,015.22	7	\$1,397.00	1%	4%	\$0.08	41	64	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	Existing	3,828.35	20	\$1,117.00	1%	10%	\$0.02	458	705	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	709.75	5	\$400.00	1%	10%	\$0.03	90	140	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	Existing	1,878.89	5	\$110.00	25%	65%	\$0.00	393	614	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$101.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	Existing	37.72	15	\$3.00	15%	75%	\$0.01	32	48	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	443.71	15	\$1,397.00	16%	75%	\$0.19	359	564	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	Existing	1,411.74	20	\$12,500.00	1%	30%	\$0.49	537	905	BEST Simulation
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	Existing	6,324.70	14	\$1,003.65	60%	at stock turnover	\$0.01	8,180	7,866	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	661.80	5	\$1,800.00	3%	75%	\$0.16	638	1,046	AEG study for PN&L
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,013.40	20	\$40,000.00	10%	25%	\$0.09	212	298	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	591.25	5	\$1,800.00	6%	75%	\$0.16	286	402	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	911.12	7	\$1,397.00	1%	2%	\$0.08	5	7	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	New	3,655.38	20	\$1,117.00	1%	12%	\$0.02	267	375	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	New	674.81	5	\$400.00	0%	75%	\$0.03	356	501	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	New	1,770.81	5	\$110.00	25%	65%	\$0.00	188	264	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	New	0.00	15	\$101.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	New	35.71	15	\$3.00	15%	75%	\$0.01	15	21	DEER
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	New	397.08	15	\$1,397.00	1%	75%	\$0.19	205	289	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	New	1,264.59	20	\$12,500.00	1%	30%	\$0.49	255	358	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	New	6,324.70	14	\$1,003.65	60%	at stock turnover	\$0.01	6,511	6,344	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	614.38	5	\$1,800.00	6%	75%	\$0.16	298	419	AEG study for PN&L
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	19,488.93	23	\$22,139.09	7%	at stock turnover	\$0.04	1,541	1,326	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	Existing	10,692.25	23	\$2,888.92	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,462.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$578.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	5,406.78	15	\$7,800.00	45%	85%	\$0.20	6,625	8,036	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,218.21	10	\$1,500.00	15%	35%	\$0.04	865	1,035	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	12,806.38	15	\$2,381.00	15%	75%	\$0.01	537	622	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	2,049.66	15	\$3,175.00	20%	65%	\$0.04	3,308	3,917	BEST Simulation
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	17,196.28	23	\$18,218.72	5%	at stock turnover	\$0.05	1,291	1,294	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	235.59	18	\$15.00	15%	50%	\$0.01	310	373	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	Existing	10,055.37	10	\$4,748.00	18%	75%	\$0.03	6,398	8,074	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	3,618.00	15	\$173.00	15%	75%	\$0.03	8,108	9,219	BEST Simulation
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	2,315.65	50	\$25,000.00	15%	25%	\$0.57	780	1,109	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	1,883.37	45	\$12,627.00	15%	35%	\$0.09	1,334	1,600	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	975.41	20	\$82.00	15%	50%	\$0.02	1,279	1,450	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	2,008.00	45	\$6,928.00	15%	35%	\$0.12	1,410	1,705	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,291.14	20	\$3,500.00	15%	50%	\$0.08	1,594	1,919	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	-717.93	45	\$7,710.00	15%	35%	\$0.16	-502	-610	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	2,353.51	3	\$6,100.00	10%	75%	\$0.07	5,243	6,496	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	Existing	20,404.83	23	\$73,973.31	70%	at stock turnover	\$0.34	15,095	12,637	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$20,877.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	1,734.28	3	\$3,175.00	0%	3%	\$0.06	182	267	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	Existing	15,954.90	23	\$4,371.07	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,462.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$6,719.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	8,728.81	20	\$40,000.00	10%	25%	\$0.11	3,377	3,605	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	18,367.04	23	\$19,289.85	9%	at stock turnover	\$0.04	1,864	1,583	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	New	9,043.40	23	\$2,560.40	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,462.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$578.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	New	1,802.44	3	\$9,600.00	10%	75%	\$0.14	3,014	3,218	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	1,260.05	15	\$7,800.00	45%	85%	\$0.86	1,132	1,209	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	947.74	10	\$1,500.00	15%	50%	\$0.06	856	914	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	10,404.05	15	\$2,381.00	15%	75%	\$0.01	302	311	Developed from RTF
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	New	1,601.59	15	\$3,175.00	20%	65%	\$0.05	1,862	1,988	BEST Simulation
Small Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Retail bldg.	New	4,763.95	15	\$118,763.67	10%	at stock turnover	\$2.00	3,426	3,233	PacifiCorp Program Data
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	16,226.87	23	\$15,874.02	7%	at stock turnover	\$0.04	1,566	1,571	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	185.55	18	\$14.00	15%	50%	\$0.00	169	180	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	New	7,631.25	10	\$4,748.00	18%	75%	\$0.04	1,279	1,368	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	3,205.29	15	\$173.00	15%	75%	\$0.01	4,995	5,333	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	1,759.66	50	\$25,000.00	15%	25%	\$0.73	452	483	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	-93.60	45	\$12,627.00	15%	50%	\$0.16	-84	-90	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	645.58	20	\$82.00	15%	50%	\$0.01	587	627	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	1,518.78	45	\$6,928.00	15%	50%	\$0.15	1,369	1,461	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	1,004.44	20	\$3,500.00	15%	50%	\$0.10	907	968	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	-15.69	45	\$7,710.00	15%	50%	\$1.39	-14	-15	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Retail bldg.	New	6,591.57	15	\$3,687.42	4%	at stock turnover	\$0.04	785	732	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	New	19,242.36	23	\$64,453.15	90%	at stock turnover	\$0.31	18,232	15,019	BEST Simulation
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$20,877.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	1,302.11	3	\$3,175.00	0%	3%	\$0.07	131	140	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	New	13,580.83	23	\$3,874.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,462.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$6,719.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	77.73	15	\$3,175.00	20%	65%	\$0.04	290	477	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	228.17	5	\$639.00	15%	25%	\$0.15	184	394	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	26.80	10	\$438.00	33%	60%	\$0.84	59	127	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	Existing	1,339.77	10	\$685.00	15%	30%	\$0.03	1,722	3,367	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	152.90	15	-\$6.06	100%	at stock turnover	\$0.01	42	135	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	194.94	15	\$47.97	100%	at stock turnover	\$0.01	11,342	11,306	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	31.91	15	\$26.25	100%	at stock turnover	\$0.03	4,202	4,078	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	6.93	15	\$0.61	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	76.99	3	\$6,100.00	10%	75%	\$0.07	410	683	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	33.69	6	\$0.72	100%	at stock turnover	\$0.01	0	9	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	27.42	15	\$13.06	100%	at stock turnover	\$0.02	2,421	1,696	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	66.74	3	\$3,175.00	0%	3%	\$0.06	16	40	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	361.12	20	\$40,000.00	10%	25%	\$0.11	228	339	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	62.25	3	\$9,600.00	10%	75%	\$0.14	169	253	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	65.36	15	\$3,175.00	20%	65%	\$0.05	124	185	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	188.42	5	\$639.00	15%	25%	\$0.15	79	118	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	23.18	10	\$438.00	44%	60%	\$0.83	16	23	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	New	1,127.13	10	\$685.00	15%	30%	\$0.03	716	1,068	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	152.90	15	-\$6.06	100%	at stock turnover	\$0.01	29	93	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	194.94	15	\$47.97	100%	at stock turnover	\$0.01	7,678	7,694	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	31.91	15	\$26.25	100%	at stock turnover	\$0.02	2,841	2,777	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	6.93	15	\$0.61	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	33.69	6	\$0.72	100%	at stock turnover	\$0.01	0	7	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	27.42	15	\$13.06	100%	at stock turnover	\$0.02	1,551	887	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	54.45	3	\$3,175.00	0%	3%	\$0.07	9	13	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	2,817.09	15	\$1.08	4%	at stock turnover	\$0.00	46	45	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	287.11	10	\$1.15	4%	at stock turnover	\$0.00	16	14	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	486.74	18	\$4.88	4%	at stock turnover	\$0.00	6	6	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	516.93	10	\$2.59	4%	at stock turnover	\$0.00	20	17	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	2,817.09	15	\$1.62	5%	at stock turnover	\$0.00	52	51	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	287.11	10	\$1.72	5%	at stock turnover	\$0.00	15	14	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	486.74	18	\$7.32	5%	at stock turnover	\$0.00	6	6	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	516.93	10	\$3.88	5%	at stock turnover	\$0.00	18	17	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	2,426.39	23	\$11,363.74	7%	at stock turnover	\$0.04	170	147	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	-3,003.16	15	\$7,800.00	45%	85%	\$0.20	-779	-850	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,146.67	10	\$1,500.00	15%	35%	\$0.04	177	186	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	18,003.91	15	\$2,381.00	15%	75%	\$0.01	1,791	1,790	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	1,930.10	15	\$3,175.00	20%	65%	\$0.04	676	703	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	1,871.29	23	\$11,445.67	5%	at stock turnover	\$0.05	120	120	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	-145.40	18	\$15.00	15%	50%	\$0.01	-40	-42	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	-2,962.07	15	\$173.00	15%	75%	\$0.03	-1,358	-1,438	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	7,624.49	45	\$12,627.00	15%	35%	\$0.09	1,173	1,233	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-549.29	20	\$82.00	15%	50%	\$0.02	-147	-156	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	1,861.87	45	\$6,928.00	15%	35%	\$0.12	280	301	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,460.89	20	\$3,500.00	15%	50%	\$0.08	387	414	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	4,258.03	45	\$7,710.00	15%	35%	\$0.16	638	689	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	2,227.37	3	\$6,100.00	10%	75%	\$0.07	1,086	1,171	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	Existing	0.00	14	\$19,341.00	3%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	1,589.51	3	\$3,175.00	0%	3%	\$0.06	35	43	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	7,922.82	20	\$40,000.00	10%	25%	\$0.11	519	522	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	2,114.74	23	\$10,363.97	9%	at stock turnover	\$0.04	169	145	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	New	1,564.34	3	\$9,600.00	10%	75%	\$0.14	442	444	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	-871.90	15	\$7,800.00	45%	85%	\$0.86	-132	-133	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	861.62	10	\$1,500.00	15%	50%	\$0.06	132	133	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	17,910.35	15	\$2,381.00	15%	75%	\$0.01	831	831	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	New	1,456.19	15	\$3,175.00	20%	65%	\$0.05	286	288	BEST Simulation
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	1,669.69	23	\$9,972.66	7%	at stock turnover	\$0.04	133	133	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	365.63	18	\$14.00	15%	50%	\$0.00	56	56	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	-2,011.79	15	\$173.00	15%	75%	\$0.01	-527	-530	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	5,453.95	45	\$12,627.00	15%	50%	\$0.16	831	837	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	258.84	20	\$82.00	15%	50%	\$0.01	40	40	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	1,378.28	45	\$6,928.00	15%	50%	\$0.15	210	212	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	1,112.87	20	\$3,500.00	15%	50%	\$0.10	170	171	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	374.31	45	\$7,710.00	15%	50%	\$1.39	57	57	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	New	0.00	14	\$19,341.00	6%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	1,130.11	3	\$3,175.00	0%	3%	\$0.07	19	19	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	449.93	15	\$3,175.00	20%	65%	\$0.04	1,665	2,764	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	340.14	15	-\$13.47	100%	at stock turnover	\$0.01	116	376	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	433.67	15	\$106.71	100%	at stock turnover	\$0.01	31,616	31,517	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	2,226.59	5	\$9,533.00	5%	15%	\$0.21	596	1,289	Illinois TRM
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	Existing	3,541.40	5	\$457.00	15%	50%	\$0.01	3,645	6,819	Illinois TRM
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	2,676.95	12	\$4,000.00	3%	25%	\$0.08	4,729	10,046	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	Existing	405.20	16	\$288.00	1%	3%	\$0.04	67	159	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	2,900.10	10	\$1,193.00	7%	45%	\$0.02	6,513	12,949	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$1,331.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	Existing	360.37	5	\$1,100.00	10%	25%	\$0.12	103	359	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	97.95	15	\$80.57	100%	at stock turnover	\$0.03	53,643	52,053	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	21.26	15	\$1.87	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	428.31	3	\$6,100.00	10%	75%	\$0.07	2,222	3,800	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	97.69	6	\$2.08	100%	at stock turnover	\$0.01	0	58	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	79.51	15	\$37.87	100%	at stock turnover	\$0.02	16,113	11,291	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	371.69	3	\$3,175.00	0%	3%	\$0.06	89	236	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	2,063.81	20	\$40,000.00	10%	25%	\$0.11	1,307	1,934	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	358.61	3	\$9,600.00	10%	75%	\$0.14	982	1,453	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	387.81	15	\$3,175.00	20%	65%	\$0.05	740	1,096	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	340.14	15	-\$13.47	100%	at stock turnover	\$0.01	80	260	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	433.67	15	\$106.71	100%	at stock turnover	\$0.01	21,401	21,448	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	1,839.44	5	\$9,533.00	5%	15%	\$0.23	265	382	Illinois TRM
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	New	2,942.53	5	\$457.00	15%	50%	\$0.01	1,507	2,172	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	2,295.54	12	\$4,000.00	4%	25%	\$0.08	1,995	2,951	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	New	349.21	16	\$288.00	1%	3%	\$0.04	30	44	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	2,426.46	10	\$1,193.00	22%	45%	\$0.02	1,088	1,609	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$1,331.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	New	245.59	5	\$1,100.00	10%	25%	\$0.17	45	75	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	97.95	15	\$80.57	100%	at stock turnover	\$0.02	36,262	35,444	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	21.26	15	\$1.87	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	97.69	6	\$2.08	100%	at stock turnover	\$0.01	0	47	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	79.51	15	\$37.87	100%	at stock turnover	\$0.02	10,325	5,902	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	311.18	3	\$3,175.00	0%	3%	\$0.07	51	76	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	79.87	7	\$932.00	1%	8%	\$0.17	30	30	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	Existing	1.17	7	\$20.00	1%	3%	\$1.34	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	Existing	57.12	10	\$130.00	1%	3%	\$0.18	6	6	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	Existing	248.51	15	\$1,395.00	15%	75%	\$0.44	149	149	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	179.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	Existing	32.29	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	269.22	3	\$3,175.00	0%	3%	\$0.06	53	52	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	92.17	7	\$932.00	1%	4%	\$0.17	6	6	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	New	1.35	7	\$1.00	1%	3%	\$0.06	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	New	0.00	13	\$0.00	26%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	New	248.51	15	\$1,395.00	15%	75%	\$0.44	83	83	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	New	179.98	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	New	32.29	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	262.96	3	\$3,175.00	0%	3%	\$0.07	33	33	BEST Simulation
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	239.82	6	\$1.80	100%	at stock turnover	\$0.00	372	393	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	Existing	24.88	4	\$265.00	10%	50%	\$0.77	305	335	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	47.22	6	\$1.17	100%	at stock turnover	\$0.00	73	77	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	41.71	6	\$2.82	100%	at stock turnover	\$0.01	26	27	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	73.84	5	\$400.00	10%	25%	\$0.40	344	373	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	97.56	6	\$0.73	100%	at stock turnover	\$0.00	276	293	Assumed same as Desktop
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	52.09	6	\$0.67	100%	at stock turnover	\$0.00	19	19	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	350.02	6	\$2.63	100%	at stock turnover	\$0.00	1,421	1,463	Assumed same as Desktop
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	239.82	6	\$1.80	100%	at stock turnover	\$0.00	232	230	ENERGY STAR Calculator
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	New	26.99	4	\$265.00	10%	50%	\$0.70	151	160	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	47.22	6	\$1.17	100%	at stock turnover	\$0.00	46	45	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	41.71	6	\$2.82	100%	at stock turnover	\$0.01	16	16	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	80.81	5	\$400.00	10%	25%	\$0.36	170	180	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	97.56	6	\$0.73	100%	at stock turnover	\$0.00	169	168	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	52.09	6	\$0.67	100%	at stock turnover	\$0.00	10	10	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	350.02	6	\$2.63	100%	at stock turnover	\$0.00	777	764	Assumed same as Desktop
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,754.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	Existing	133.66	9	\$0.77	5%	at stock turnover	\$0.00	12	11	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	Existing	232.43	8	\$1,695.00	0%	25%	\$0.57	20	20	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	Existing	820.00	9	\$63.00	0%	25%	\$0.01	140	140	PacifiCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	Existing	31.44	15	\$4,697.00	0%	25%	\$9.99	13	15	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	Existing	64.65	15	\$3,708.00	0%	25%	\$3.91	27	31	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,070.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	Existing	308.30	10	\$4.56	5%	at stock turnover	\$0.00	59	52	EIA 2011
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,031.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	New	133.66	9	\$1.15	8%	at stock turnover	\$0.00	9	9	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	New	268.19	8	\$1,695.00	0%	25%	\$0.50	16	16	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	New	820.00	9	\$63.00	0%	25%	\$0.01	98	98	PacificCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	New	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	New	31.06	15	\$4,697.00	0%	25%	\$10.18	10	10	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	New	63.81	15	\$3,708.00	0%	25%	\$3.98	20	20	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,070.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	New	308.30	10	\$6.84	8%	at stock turnover	\$0.00	57	53	EIA 2011
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	46.59	15	\$7,800.00	45%	85%	\$0.20	61	74	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	401.49	15	\$3,175.00	20%	65%	\$0.04	695	822	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	81.86	18	\$15.00	15%	50%	\$0.01	112	142	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	-112.55	15	\$173.00	15%	75%	\$0.03	-259	-307	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	459.18	50	\$25,000.00	15%	25%	\$0.57	168	234	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	285.16	45	\$12,627.00	15%	35%	\$0.09	217	259	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-2.53	20	\$82.00	15%	50%	\$0.02	-3	-4	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	253.77	20	\$3,500.00	15%	50%	\$0.08	337	404	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	37.94	45	\$7,710.00	15%	35%	\$0.16	28	35	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	466.74	3	\$6,100.00	10%	75%	\$0.07	1,130	1,380	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	337.47	3	\$3,175.00	0%	3%	\$0.06	38	55	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	Existing	121.22	15	\$2,200.00	15%	25%	\$1.28	44	55	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	Existing	1,152.39	18	\$1,700.00	15%	35%	\$0.11	871	1,049	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	Existing	3,882.10	20	\$3,870.24	100%	at stock turnover	\$0.08	2,801	2,833	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	Existing	3,264.92	15	\$739.00	13%	25%	\$0.02	1,490	1,733	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,522.13	20	\$40,000.00	10%	25%	\$0.11	470	483	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	New	311.54	3	\$9,600.00	10%	75%	\$0.14	416	427	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	78.69	15	\$7,800.00	45%	85%	\$0.86	56	58	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	New	277.54	15	\$3,175.00	20%	65%	\$0.05	257	264	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	63.03	18	\$14.00	15%	50%	\$0.00	46	47	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	-84.99	15	\$173.00	15%	75%	\$0.01	-105	-108	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	304.09	50	\$25,000.00	15%	25%	\$0.73	62	64	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	15.04	45	\$12,627.00	15%	50%	\$0.16	11	11	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	79.28	20	\$82.00	15%	50%	\$0.01	57	59	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	175.16	20	\$3,500.00	15%	50%	\$0.10	126	130	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	2.00	45	\$7,710.00	15%	50%	\$1.39	1	1	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	225.06	3	\$3,175.00	0%	3%	\$0.07	18	19	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	New	80.01	15	\$1,300.00	15%	25%	\$1.08	16	17	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	New	772.71	18	\$1,700.00	15%	35%	\$0.15	318	326	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	New	3,597.30	20	\$3,607.39	100%	at stock turnover	\$0.08	1,449	1,467	BEST Simulation
Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	New	2,251.03	15	\$739.00	19%	25%	\$0.02	257	264	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	489.88	5	\$1,800.00	3%	75%	\$0.21	432	701	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	262.71	7	\$932.00	1%	8%	\$0.17	22	35	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	Existing	2,980.99	20	\$745.00	1%	5%	\$0.02	179	271	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	522.80	5	\$400.00	1%	10%	\$0.05	60	94	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	Existing	1,348.30	5	\$221.00	25%	65%	\$0.01	255	405	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

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Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$90.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	Existing	14.76	15	\$3.00	15%	75%	\$0.01	11	17	DEER
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	326.88	15	\$1,141.00	16%	75%	\$0.22	241	377	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	Existing	1,128.60	20	\$8,333.00	1%	30%	\$0.45	405	641	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	Existing	4,634.83	14	\$791.66	62%	at stock turnover	\$0.01	5,323	5,121	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	470.20	5	\$1,800.00	3%	75%	\$0.21	408	680	AEG study for PN&L
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,495.98	20	\$40,000.00	10%	25%	\$0.11	127	179	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	440.47	5	\$1,800.00	6%	75%	\$0.21	172	242	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	236.73	7	\$932.00	1%	4%	\$0.17	3	5	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	New	2,832.74	20	\$745.00	1%	7%	\$0.02	99	140	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	New	501.41	5	\$400.00	0%	75%	\$0.05	214	301	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	New	1,276.52	5	\$221.00	25%	65%	\$0.01	109	154	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$90.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	New	14.09	15	\$3.00	15%	75%	\$0.01	5	7	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	294.91	15	\$1,141.00	1%	75%	\$0.21	123	173	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	New	1,013.64	20	\$8,333.00	1%	30%	\$0.44	166	233	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	New	4,634.83	14	\$791.66	62%	at stock turnover	\$0.01	3,843	3,743	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	423.92	5	\$1,800.00	6%	75%	\$0.21	165	232	AEG study for PN&L
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Warehouse bldg.	Existing	60,421.99	23	\$31,241.87	2%	at stock turnover	\$0.34	796	803	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	Existing	64,680.95	23	\$17,476.04	3%	at stock turnover	\$0.02	1,147	1,158	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	27,419.93	10	\$810.00	15%	75%	\$0.00	464	514	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	5,232.73	15	\$950.00	15%	75%	\$0.01	87	99	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	Existing	1,299.65	15	\$2,220.00	15%	75%	\$0.10	20	26	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

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Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	Existing	48,667.61	12	\$45,000.00	15%	75%	\$0.06	3,982	5,060	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	8,637.94	10	\$15,000.00	15%	35%	\$0.04	237	275	AEG research & analysis
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	77,938.48	15	\$3,570.00	15%	25%	\$0.00	102	118	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	14,534.86	15	\$31,750.00	20%	65%	\$0.04	906	1,039	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	Existing	28,784.89	15	\$3,898.54	0%	at stock turnover	\$0.01	32	30	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	Existing	103,783.83	23	\$158,871.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	3,108.59	18	\$60.00	15%	25%	\$0.00	45	52	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	Existing	60,741.19	10	\$18,240.00	18%	75%	\$0.02	1,758	2,113	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	15,693.81	50	\$250,000.00	15%	25%	\$0.90	204	280	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	36,031.19	45	\$126,270.00	15%	35%	\$0.05	1,009	1,145	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	8,916.27	20	\$820.00	15%	35%	\$0.01	255	283	BEST Simulation
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	13,389.88	45	\$69,280.00	15%	35%	\$0.10	357	426	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	9,204.40	20	\$35,000.00	15%	50%	\$0.07	441	512	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	-5,155.70	45	\$77,100.00	15%	35%	\$0.08	-141	-164	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	Existing	45,224.25	15	\$23,477.20	1%	at stock turnover	\$0.04	574	531	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	15,951.62	3	\$61,000.00	10%	75%	\$0.07	1,374	1,648	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	Existing	123,297.38	23	\$345,202.02	9%	at stock turnover	\$0.26	2,897	2,425	BEST Simulation

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Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$80,200.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	11,543.59	3	\$31,750.00	3%	11%	\$0.06	122	182	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	Existing	94,408.41	23	\$25,864.49	0%	at stock turnover	\$0.02	188	187	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	27,323.20	10	\$810.00	15%	75%	\$0.00	49	58	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	33,871.38	4	\$810.00	15%	75%	\$0.00	60	73	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	6,079.71	15	\$950.00	15%	75%	\$0.01	11	13	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	Existing	1,090.70	15	\$4,390.00	15%	75%	\$0.22	2	3	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	58,394.87	20	\$400,000.00	10%	15%	\$0.10	312	328	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Warehouse bldg.	New	57,016.81	23	\$26,958.99	2%	at stock turnover	\$0.35	1,082	1,093	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	New	54,706.50	23	\$15,488.69	3%	at stock turnover	\$0.02	1,398	1,412	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	32,317.24	10	\$810.00	15%	75%	\$0.00	403	417	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	4,035.31	15	\$950.00	15%	75%	\$0.02	50	52	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$2,220.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	New	12,372.38	3	\$96,000.00	10%	75%	\$0.12	860	904	6th Plan
Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	New	37,808.83	12	\$45,000.00	15%	75%	\$0.08	2,438	2,563	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	6,859.82	10	\$15,000.00	15%	50%	\$0.04	259	272	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	63,329.40	15	\$3,570.00	15%	25%	\$0.00	63	65	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	New	11,592.72	15	\$31,750.00	20%	65%	\$0.05	562	591	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	New	28,784.89	15	\$4,288.39	0%	at stock turnover	\$0.01	37	35	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	New	79,223.87	23	\$120,659.74	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	3,469.74	18	\$50.00	15%	25%	\$0.00	38	39	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	New	46,460.45	10	\$18,240.00	18%	75%	\$0.03	379	402	DEER
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	12,080.58	50	\$250,000.00	15%	25%	\$1.13	129	136	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	3,896.32	45	\$126,270.00	15%	50%	\$0.07	147	154	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	6,752.59	20	\$820.00	15%	25%	\$0.01	73	77	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	11,240.43	45	\$69,280.00	15%	50%	\$0.11	423	445	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	7,243.47	20	\$35,000.00	15%	50%	\$0.08	273	287	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	-109.10	45	\$77,100.00	15%	50%	\$0.61	-4	-4	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	New	39,827.81	15	\$22,280.28	1%	at stock turnover	\$0.04	524	490	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	New	116,363.84	23	\$297,879.03	9%	at stock turnover	\$0.24	3,900	3,232	BEST Simulation
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$80,200.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	8,953.48	3	\$31,750.00	3%	11%	\$0.06	100	105	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	New	80,360.57	23	\$22,923.22	0%	at stock turnover	\$0.02	230	229	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	19,565.17	10	\$810.00	15%	75%	\$0.00	26	28	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	24,311.06	4	\$810.00	15%	75%	\$0.00	32	35	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	3,252.37	15	\$950.00	15%	75%	\$0.02	4	5	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$4,390.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	503.63	15	\$31,750.00	20%	65%	\$0.04	388	654	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	1,498.32	5	\$650.00	15%	25%	\$0.02	254	551	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	320.99	10	\$3,430.00	33%	60%	\$0.53	146	327	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	Existing	8,673.38	10	\$5,360.00	15%	30%	\$0.03	2,303	4,676	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	859.13	15	-\$44.23	100%	at stock turnover	\$0.01	38	118	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,095.38	15	\$350.40	100%	at stock turnover	\$0.01	10,392	10,300	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	84.63	15	\$90.49	100%	at stock turnover	\$0.03	6,084	5,904	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	18.36	15	\$2.10	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	493.76	3	\$61,000.00	10%	75%	\$0.07	541	926	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	141.29	6	\$3.91	100%	at stock turnover	\$0.01	0	34	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	114.99	15	\$71.21	100%	at stock turnover	\$0.03	9,436	6,617	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	428.75	3	\$31,750.00	3%	11%	\$0.06	58	153	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	2,311.93	20	\$400,000.00	10%	15%	\$0.10	141	211	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	408.31	3	\$96,000.00	10%	75%	\$0.12	322	484	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	422.20	15	\$31,750.00	20%	65%	\$0.05	232	348	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	1,249.66	5	\$650.00	15%	25%	\$0.02	152	228	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	275.04	10	\$3,430.00	44%	60%	\$0.54	54	81	AEG research & analysis

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Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	New	7,277.61	10	\$5,360.00	15%	30%	\$0.04	1,339	2,011	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	859.13	15	-\$44.23	100%	at stock turnover	\$0.01	35	107	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,095.38	15	\$350.40	100%	at stock turnover	\$0.01	9,843	9,815	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	84.63	15	\$90.49	100%	at stock turnover	\$0.03	5,771	5,648	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	18.36	15	\$2.10	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	141.29	6	\$3.91	100%	at stock turnover	\$0.01	0	37	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	114.99	15	\$71.21	100%	at stock turnover	\$0.03	8,459	4,805	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	354.55	3	\$31,750.00	3%	11%	\$0.06	45	68	BEST Simulation
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	7,122.52	15	\$1.56	2%	at stock turnover	\$0.00	14	14	Illinois TRM
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	725.90	10	\$1.66	2%	at stock turnover	\$0.00	5	4	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,230.63	18	\$7.05	2%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,306.96	10	\$3.74	2%	at stock turnover	\$0.00	6	5	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	7,122.52	15	\$1.88	3%	at stock turnover	\$0.00	18	18	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	725.90	10	\$1.83	2%	at stock turnover	\$0.00	5	4	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,230.63	18	\$7.76	2%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,306.96	10	\$4.49	3%	at stock turnover	\$0.00	6	6	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Warehouse bldg.	Existing	8,181.99	23	\$295,696.16	2%	at stock turnover	\$0.34	108	109	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	20,683.96	10	\$15,000.00	15%	35%	\$0.04	597	618	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	276,827.11	15	\$3,570.00	15%	25%	\$0.00	2,968	2,968	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	34,819.35	15	\$31,750.00	20%	65%	\$0.04	2,284	2,342	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	Existing	3,941.65	23	\$138,539.06	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	3,585.42	18	\$60.00	15%	25%	\$0.00	53	54	BEST Simulation
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	141,796.87	45	\$126,270.00	15%	35%	\$0.05	4,203	4,238	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	1,681.05	20	\$820.00	15%	35%	\$0.01	50	50	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	33,830.91	45	\$69,280.00	15%	35%	\$0.10	960	1,011	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	26,547.06	20	\$35,000.00	15%	50%	\$0.07	1,326	1,389	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	78,971.95	45	\$77,100.00	15%	35%	\$0.08	2,275	2,360	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	40,306.70	3	\$61,000.00	10%	75%	\$0.07	3,701	3,915	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	Existing	0.00	14	\$80,910.00	3%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	29,169.31	3	\$31,750.00	3%	11%	\$0.06	330	370	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	174,702.49	20	\$400,000.00	10%	15%	\$0.10	847	847	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Warehouse bldg.	New	9,433.12	23	\$296,268.88	2%	at stock turnover	\$0.35	163	164	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	New	37,011.01	3	\$96,000.00	10%	75%	\$0.12	2,331	2,332	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	20,071.85	10	\$15,000.00	15%	50%	\$0.04	684	684	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	276,828.20	15	\$3,570.00	15%	25%	\$0.00	1,937	1,937	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	New	33,923.95	15	\$31,750.00	20%	65%	\$0.05	1,487	1,488	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	New	15,599.16	23	\$105,217.74	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	-43.99	18	\$50.00	15%	25%	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	132,946.18	45	\$126,270.00	15%	50%	\$0.07	4,528	4,529	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	-2,750.83	20	\$820.00	15%	25%	\$0.01	-27	-27	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	31,535.98	45	\$69,280.00	15%	50%	\$0.11	1,071	1,071	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	24,806.22	20	\$35,000.00	15%	50%	\$0.08	843	843	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	8,790.67	45	\$77,100.00	15%	50%	\$0.61	298	298	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	New	0.00	14	\$80,910.00	6%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	26,784.23	3	\$31,750.00	3%	11%	\$0.06	272	272	BEST Simulation
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	3,004.14	15	\$31,750.00	20%	65%	\$0.04	2,471	3,899	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,797.74	15	-\$92.56	100%	at stock turnover	\$0.01	329	1,016	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	2,292.09	15	\$733.23	100%	at stock turnover	\$0.01	89,547	88,753	EIA 2011
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	9,357.27	5	\$15,880.00	5%	15%	\$0.09	537	1,139	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	Existing	14,727.63	5	\$2,600.00	15%	50%	\$0.01	3,201	5,994	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	17,869.62	12	\$40,000.00	3%	25%	\$0.12	7,019	13,806	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	Existing	2,705.51	16	\$1,640.00	1%	3%	\$0.03	99	213	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	19,391.99	10	\$6,790.00	7%	45%	\$0.02	9,667	17,815	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$7,360.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	Existing	1,134.03	5	\$11,000.00	10%	25%	\$0.39	71	236	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	120.82	15	\$129.19	100%	at stock turnover	\$0.03	47,107	45,711	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	26.22	15	\$3.00	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	2,845.83	3	\$61,000.00	10%	75%	\$0.07	3,282	5,335	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	241.91	6	\$6.70	100%	at stock turnover	\$0.01	0	42	EIA 2011
Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	196.89	15	\$121.92	100%	at stock turnover	\$0.03	11,657	8,174	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	2,479.12	3	\$31,750.00	3%	11%	\$0.06	352	832	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	14,952.64	20	\$400,000.00	10%	15%	\$0.10	943	1,378	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	2,535.61	3	\$96,000.00	10%	75%	\$0.12	2,069	3,023	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	2,706.60	15	\$31,750.00	20%	65%	\$0.05	1,538	2,247	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,797.74	15	-\$92.56	100%	at stock turnover	\$0.01	298	919	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	2,292.09	15	\$733.23	100%	at stock turnover	\$0.01	84,812	84,571	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	7,878.04	5	\$15,880.00	5%	15%	\$0.09	337	481	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	New	12,170.57	5	\$2,600.00	15%	50%	\$0.01	1,845	2,635	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	15,886.48	12	\$40,000.00	4%	25%	\$0.12	4,105	5,999	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	New	2,437.25	16	\$1,640.00	1%	3%	\$0.03	62	90	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	16,936.38	10	\$6,790.00	22%	45%	\$0.02	2,259	3,301	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$7,360.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	New	836.09	5	\$11,000.00	10%	25%	\$0.50	45	74	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	120.82	15	\$129.19	100%	at stock turnover	\$0.03	44,684	43,732	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	26.22	15	\$3.00	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	241.91	6	\$6.70	100%	at stock turnover	\$0.01	0	45	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	196.89	15	\$121.92	100%	at stock turnover	\$0.03	10,450	5,936	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	2,208.60	3	\$31,750.00	3%	11%	\$0.06	290	424	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	323.45	7	\$1,400.00	1%	4%	\$0.18	11	11	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	Existing	4.74	7	\$30.00	1%	3%	\$0.50	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	Existing	231.96	10	\$190.00	1%	3%	\$0.06	5	5	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	Existing	0.00	13	\$0.00	50%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	Existing	2,247.14	15	\$4,110.00	15%	75%	\$0.14	646	646	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	1,799.77	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	Existing	322.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	1,800.73	3	\$31,750.00	3%	11%	\$0.06	241	236	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	379.52	7	\$1,400.00	1%	2%	\$0.16	2	2	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	New	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	New	2,247.14	15	\$4,110.00	15%	75%	\$0.14	506	506	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	New	1,799.77	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	New	322.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	1,729.00	3	\$31,750.00	3%	11%	\$0.06	210	207	BEST Simulation
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	3,051.45	6	\$22.90	100%	at stock turnover	\$0.00	1,001	1,056	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	Existing	1,067.10	4	\$2,650.00	10%	50%	\$0.17	2,558	2,892	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	480.61	6	\$11.91	100%	at stock turnover	\$0.00	158	166	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	530.76	6	\$35.89	100%	at stock turnover	\$0.01	70	74	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	3,281.33	5	\$4,000.00	10%	25%	\$0.09	3,100	3,345	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,241.30	6	\$7.17	77%	at stock turnover	\$0.00	575	610	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	662.74	6	\$8.47	100%	at stock turnover	\$0.00	50	52	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	4,453.59	6	\$29.74	89%	at stock turnover	\$0.00	3,573	3,673	Assumed same as Desktop
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	3,051.45	6	\$22.90	100%	at stock turnover	\$0.00	875	864	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	New	1,172.41	4	\$2,650.00	10%	50%	\$0.15	1,891	1,997	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	480.61	6	\$11.91	100%	at stock turnover	\$0.00	138	136	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	530.76	6	\$35.89	100%	at stock turnover	\$0.01	61	60	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	3,731.15	5	\$4,000.00	10%	25%	\$0.08	2,268	2,395	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,241.30	6	\$7.89	85%	at stock turnover	\$0.00	538	533	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	662.74	6	\$8.47	100%	at stock turnover	\$0.00	37	36	ENERGY STAR Calculator
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	4,453.59	6	\$33.42	100%	at stock turnover	\$0.00	2,925	2,868	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	Existing	3,265.09	9	\$37.09	10%	at stock turnover	\$0.00	316	290	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	Existing	1,230.00	9	\$90.00	0%	10%	\$0.01	2	2	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$20,000.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$5,560.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	Existing	7,531.52	10	\$220.48	10%	at stock turnover	\$0.00	607	529	EIA 2011
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	New	3,265.09	9	\$44.51	12%	at stock turnover	\$0.00	325	294	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	New	1,230.00	9	\$90.00	0%	10%	\$0.01	2	2	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$20,000.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$5,560.00	0%	0%	\$10.00	0	0	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	New	7,531.52	10	\$264.57	12%	at stock turnover	\$0.00	710	652	EIA 2011
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	1,013.14	15	\$31,750.00	20%	65%	\$0.04	336	438	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	519.36	18	\$60.00	15%	25%	\$0.00	41	55	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	1,162.81	50	\$250,000.00	15%	25%	\$0.90	82	130	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	2,335.33	45	\$126,270.00	15%	35%	\$0.05	347	449	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	-93.92	20	\$820.00	15%	35%	\$0.01	-15	-18	BEST Simulation
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	642.24	20	\$35,000.00	15%	50%	\$0.07	164	216	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	97.69	45	\$77,100.00	15%	35%	\$0.08	14	19	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	1,195.44	3	\$61,000.00	10%	75%	\$0.07	563	747	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	865.09	3	\$31,750.00	3%	11%	\$0.06	50	85	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	Existing	307.01	15	\$22,000.00	15%	75%	\$4.78	129	177	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	Existing	2,863.08	18	\$17,000.00	15%	35%	\$0.40	408	551	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	Existing	12,640.32	20	\$11,739.73	100%	at stock turnover	\$0.07	1,722	1,741	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	Existing	8,713.75	15	\$3,090.00	13%	50%	\$0.03	2,548	3,072	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	3,482.30	20	\$400,000.00	10%	15%	\$0.10	107	108	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	New	737.75	3	\$96,000.00	10%	75%	\$0.12	293	299	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	New	636.06	15	\$31,750.00	20%	65%	\$0.05	175	179	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	410.27	18	\$50.00	15%	25%	\$0.00	25	26	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	707.20	50	\$250,000.00	15%	25%	\$1.13	43	44	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	105.92	45	\$126,270.00	15%	50%	\$0.07	23	23	BEST Simulation
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	174.43	20	\$820.00	15%	25%	\$0.01	11	11	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	400.73	20	\$35,000.00	15%	50%	\$0.08	86	87	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	4.77	45	\$77,100.00	15%	50%	\$0.61	1	1	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	533.89	3	\$31,750.00	3%	11%	\$0.06	34	35	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	New	186.72	15	\$13,000.00	15%	75%	\$4.48	68	70	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	New	1,752.15	18	\$17,000.00	15%	35%	\$0.64	214	218	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	New	10,882.52	20	\$10,722.09	100%	at stock turnover	\$0.08	793	803	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	New	5,502.89	15	\$3,090.00	19%	50%	\$0.04	1,034	1,053	BEST Simulation
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,157.46	5	\$18,000.00	3%	75%	\$0.56	452	487	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	251.71	7	\$1,400.00	1%	4%	\$0.18	2	2	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,169.53	5	\$4,000.00	1%	10%	\$0.12	58	62	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	Existing	6,023.35	5	\$1,320.00	25%	65%	\$0.02	270	274	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	Existing	777.47	15	\$1,010.00	15%	75%	\$0.09	138	142	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	Existing	98.07	15	\$30.00	15%	75%	\$0.02	18	18	DEER
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	1,394.60	15	\$4,420.00	16%	75%	\$0.22	241	256	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	Existing	5,122.37	20	\$12,500.00	1%	30%	\$0.18	439	455	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	Existing	501.14	13	\$25.54	77%	at stock turnover	\$0.00	103	98	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,066.84	5	\$18,000.00	3%	75%	\$0.56	427	472	AEG study for PN&L
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	7,335.71	20	\$400,000.00	10%	15%	\$0.10	71	72	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,002.71	5	\$18,000.00	6%	75%	\$0.56	268	270	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	244.00	7	\$1,400.00	1%	2%	\$0.16	0	0	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,172.08	5	\$4,000.00	0%	75%	\$0.13	316	318	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	New	6,007.04	5	\$1,320.00	25%	65%	\$0.02	176	177	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	New	779.20	15	\$1,010.00	15%	75%	\$0.09	91	92	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	New	98.24	15	\$30.00	15%	75%	\$0.02	12	12	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	1,402.05	15	\$4,420.00	1%	75%	\$0.22	201	202	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	New	5,137.37	20	\$12,500.00	1%	30%	\$0.18	290	292	BEST Simulation
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	New	501.14	13	\$25.54	77%	at stock turnover	\$0.00	102	99	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,082.16	5	\$18,000.00	6%	75%	\$0.56	279	281	AEG study for PN&L
Warehouse - Refrigerated	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	47,795.79	23	\$24,713.35	2%	at stock turnover	\$0.33	9	9	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	51,164.77	23	\$13,824.13	13%	at stock turnover	\$0.02	75	75	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	21,655.22	10	\$810.00	15%	75%	\$0.00	30	33	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,124.96	15	\$950.00	15%	75%	\$0.02	6	6	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,095.23	15	\$2,220.00	15%	75%	\$0.13	1	2	BEST Simulation
Warehouse - Refrigerated	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Warehouse - Refrigerated	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,530.14	10	\$15,000.00	15%	35%	\$0.05	7	9	AEG research & analysis
Warehouse - Refrigerated	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	61,514.94	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Warehouse - Refrigerated	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	10,987.63	15	\$31,750.00	20%	65%	\$0.05	28	32	BEST Simulation
Warehouse - Refrigerated	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	22,769.80	15	\$2,126.80	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	82,096.43	23	\$125,672.49	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,414.16	18	\$60.00	15%	50%	\$0.00	5	6	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	47,164.16	10	\$18,240.00	18%	75%	\$0.03	68	82	DEER
Warehouse - Refrigerated	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,675.25	50	\$250,000.00	15%	25%	\$0.99	7	9	6th Plan
Warehouse - Refrigerated	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	27,236.46	45	\$126,270.00	15%	35%	\$0.07	31	36	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,851.96	20	\$820.00	15%	50%	\$0.01	14	16	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	10,821.44	45	\$69,280.00	15%	35%	\$0.13	12	14	BPA

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,947.95	20	\$35,000.00	15%	50%	\$0.09	14	16	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-3,879.37	45	\$77,100.00	15%	35%	\$0.10	-4	-5	BEST Simulation
Warehouse - Refrigerated	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	35,773.87	15	\$18,571.24	1%	at stock turnover	\$0.04	6	6	BEST Simulation
Warehouse - Refrigerated	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,886.16	3	\$61,000.00	10%	75%	\$0.00	46	0	6th Plan
Warehouse - Refrigerated	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	97,532.30	23	\$273,066.20	17%	at stock turnover	\$0.26	85	72	BEST Simulation
Warehouse - Refrigerated	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$80,200.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	9,325.30	3	\$31,750.00	3%	11%	\$0.00	4	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	74,680.17	23	\$20,459.67	1%	at stock turnover	\$0.02	12	12	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	21,579.17	10	\$810.00	15%	75%	\$0.00	3	40	DEER
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	26,751.04	4	\$810.00	15%	75%	\$0.00	4	124	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,793.04	15	\$950.00	15%	75%	\$0.00	1	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	917.66	15	\$4,390.00	15%	75%	\$0.27	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	46,443.00	20	\$400,000.00	10%	15%	\$0.12	10	11	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Warehouse - Refrigerated bldg.	New	45,102.18	23	\$21,325.45	2%	at stock turnover	\$0.34	12	12	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	New	43,274.65	23	\$12,252.07	13%	at stock turnover	\$0.02	91	92	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	25,509.04	10	\$810.00	15%	75%	\$0.00	26	27	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,171.75	15	\$950.00	15%	75%	\$0.02	3	3	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$2,220.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,734.93	3	\$96,000.00	10%	75%	\$0.14	28	29	6th Plan
Warehouse - Refrigerated	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,061.10	10	\$15,000.00	15%	50%	\$0.05	8	8	AEG research & analysis
Warehouse - Refrigerated	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	49,987.72	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Warehouse - Refrigerated	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,552.70	15	\$31,750.00	20%	65%	\$0.06	17	18	BEST Simulation
Warehouse - Refrigerated	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	New	22,769.80	15	\$2,339.48	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data
Warehouse - Refrigerated	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	New	62,668.69	23	\$95,445.84	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,641.88	18	\$50.00	15%	50%	\$0.00	4	4	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	35,827.63	10	\$18,240.00	18%	75%	\$0.03	15	15	DEER
Warehouse - Refrigerated	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,504.91	50	\$250,000.00	15%	25%	\$1.30	4	4	6th Plan
Warehouse - Refrigerated	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,874.70	45	\$126,270.00	15%	50%	\$0.09	4	5	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,076.48	20	\$820.00	15%	50%	\$0.02	8	8	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,222.62	45	\$69,280.00	15%	50%	\$0.14	13	13	BPA
Warehouse - Refrigerated	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,344.27	20	\$35,000.00	15%	50%	\$0.09	8	9	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-85.84	45	\$77,100.00	15%	50%	\$0.78	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	31,505.11	15	\$17,624.44	1%	at stock turnover	\$0.04	6	5	BEST Simulation
Warehouse - Refrigerated	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	92,047.64	23	\$235,632.15	17%	at stock turnover	\$0.24	115	95	BEST Simulation
Warehouse - Refrigerated	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$80,200.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	7,044.87	3	\$31,750.00	3%	11%	\$0.00	3	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	New	63,567.87	23	\$18,133.03	1%	at stock turnover	\$0.02	15	15	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	15,443.55	10	\$810.00	15%	75%	\$0.00	2	13	DEER
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	19,189.76	4	\$810.00	15%	75%	\$0.00	2	36	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,556.47	15	\$950.00	15%	75%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$4,390.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	478.99	15	\$31,750.00	20%	65%	\$0.05	8	12	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,449.74	5	\$270.00	15%	25%	\$0.01	5	10	Illinois TRM
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	51.67	10	\$580.00	33%	60%	\$0.56	0	1	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,327.86	10	\$900.00	15%	30%	\$0.01	45	88	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	965.66	15	-\$49.72	100%	at stock turnover	\$0.01	1	3	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,231.20	15	\$393.86	100%	at stock turnover	\$0.01	232	230	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	77.07	15	\$82.41	100%	at stock turnover	\$0.03	110	107	EIA 2011

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Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.72	15	\$1.91	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	473.68	3	\$61,000.00	10%	75%	\$0.08	11	2	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	123.75	6	\$3.43	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	100.72	15	\$62.37	100%	at stock turnover	\$0.03	164	115	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	411.32	3	\$31,750.00	3%	11%	\$0.06	1	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,295.85	20	\$400,000.00	10%	15%	\$0.12	3	4	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	405.47	3	\$96,000.00	10%	75%	\$0.14	6	10	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	415.53	15	\$31,750.00	20%	65%	\$0.06	5	7	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,257.82	5	\$270.00	15%	25%	\$0.01	3	5	Illinois TRM
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	45.83	10	\$580.00	44%	60%	\$0.55	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	7,227.66	10	\$900.00	15%	30%	\$0.01	27	40	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	965.66	15	-\$49.72	100%	at stock turnover	\$0.01	1	2	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,231.20	15	\$393.86	100%	at stock turnover	\$0.01	220	219	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	77.07	15	\$82.41	100%	at stock turnover	\$0.03	104	102	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.72	15	\$1.91	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	123.75	6	\$3.43	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	100.72	15	\$62.37	100%	at stock turnover	\$0.03	147	84	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	352.09	3	\$31,750.00	3%	11%	\$0.07	1	1	BEST Simulation
Warehouse - Refrigerated	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	11,537.78	15	\$58.40	41%	at stock turnover	\$0.00	10	10	Illinois TRM
Warehouse - Refrigerated	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,175.89	10	\$62.03	41%	at stock turnover	\$0.00	4	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse - Refrigerated	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,993.49	18	\$263.25	41%	at stock turnover	\$0.01	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse - Refrigerated	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,117.15	10	\$139.62	41%	at stock turnover	\$0.01	4	4	Developed from RTF "ComCookingConvectionOven" v2.0

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,537.78	15	\$70.08	49%	at stock turnover	\$0.00	13	13	Illinois TRM
Warehouse - Refrigerated	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,175.89	10	\$68.24	45%	at stock turnover	\$0.00	4	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse - Refrigerated	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,993.49	18	\$289.57	45%	at stock turnover	\$0.01	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse - Refrigerated	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,117.15	10	\$167.55	49%	at stock turnover	\$0.01	5	4	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse - Refrigerated	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,353.68	23	\$229,621.38	2%	at stock turnover	\$0.33	1	1	BEST Simulation
Warehouse - Refrigerated	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16,049.95	10	\$15,000.00	15%	35%	\$0.05	6	7	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	214,718.20	15	\$3,570.00	15%	25%	\$0.00	32	32	Developed from RTF
Warehouse - Refrigerated	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	27,018.42	15	\$31,750.00	20%	65%	\$0.05	25	25	BEST Simulation
Warehouse - Refrigerated	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,060.87	23	\$107,581.82	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,836.42	18	\$60.00	15%	50%	\$0.00	2	2	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	110,028.27	45	\$126,270.00	15%	35%	\$0.07	46	46	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,304.63	20	\$820.00	15%	50%	\$0.01	1	1	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	26,251.58	45	\$69,280.00	15%	35%	\$0.13	10	11	BPA
Warehouse - Refrigerated	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	20,809.82	20	\$35,000.00	15%	50%	\$0.09	15	15	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	60,911.23	45	\$77,100.00	15%	35%	\$0.10	24	25	BEST Simulation
Warehouse - Refrigerated	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	31,276.59	3	\$61,000.00	10%	75%	\$0.08	40	1,165	6th Plan
Warehouse - Refrigerated	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	14	\$80,910.00	3%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	22,634.36	3	\$31,750.00	3%	11%	\$0.06	4	110	BEST Simulation
Warehouse - Refrigerated	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	137,396.84	20	\$400,000.00	10%	15%	\$0.12	9	9	AEG research & analysis
Warehouse - Refrigerated	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Warehouse - Refrigerated bldg.	New	7,325.24	23	\$230,066.12	2%	at stock turnover	\$0.34	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	28,794.73	3	\$96,000.00	10%	75%	\$0.14	25	25	6th Plan
Warehouse - Refrigerated	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	15,616.03	10	\$15,000.00	15%	50%	\$0.05	7	7	AEG research & analysis
Warehouse - Refrigerated	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	214,971.68	15	\$3,570.00	15%	25%	\$0.00	21	21	Developed from RTF
Warehouse - Refrigerated	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	26,393.07	15	\$31,750.00	20%	65%	\$0.06	16	16	BEST Simulation
Warehouse - Refrigerated	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	New	12,113.45	23	\$81,706.31	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-34.21	18	\$50.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	103,432.99	45	\$126,270.00	15%	50%	\$0.09	49	49	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-2,138.83	20	\$820.00	15%	50%	\$0.02	-1	-1	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	24,324.08	45	\$69,280.00	15%	50%	\$0.14	12	12	BPA
Warehouse - Refrigerated	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	19,299.37	20	\$35,000.00	15%	50%	\$0.09	9	9	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	6,839.17	45	\$77,100.00	15%	50%	\$0.78	3	3	BEST Simulation
Warehouse - Refrigerated	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	14	\$80,910.00	6%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	20,838.25	3	\$31,750.00	3%	11%	\$0.07	3	59	BEST Simulation
Warehouse - Refrigerated	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,764.97	15	\$31,750.00	20%	65%	\$0.05	45	71	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,799.48	15	-\$92.65	100%	at stock turnover	\$0.01	7	20	EIA 2011
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	2,294.30	15	\$733.93	100%	at stock turnover	\$0.01	1,780	1,765	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,729.27	5	\$10,810.00	5%	15%	\$0.06	10	21	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,474.13	5	\$610.00	15%	50%	\$0.00	58	109	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16,395.92	12	\$40,000.00	3%	25%	\$0.13	128	252	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,490.11	16	\$390.00	1%	3%	\$0.01	2	4	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	18,268.06	10	\$1,600.00	25%	75%	\$0.00	139	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$1,780.00	7%	15%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	954.03	5	\$11,000.00	10%	25%	\$0.00	1	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	110.02	15	\$117.65	100%	at stock turnover	\$0.03	852	827	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	23.88	15	\$2.73	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,619.63	3	\$61,000.00	10%	75%	\$0.08	60	4	6th Plan
Warehouse - Refrigerated	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	192.92	6	\$5.34	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	157.02	15	\$97.23	100%	at stock turnover	\$0.03	185	129	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,274.79	3	\$31,750.00	3%	11%	\$0.06	6	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,593.25	20	\$400,000.00	10%	15%	\$0.12	17	25	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,305.96	3	\$96,000.00	10%	75%	\$0.14	37	54	6th Plan
Warehouse - Refrigerated	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,460.39	15	\$31,750.00	20%	65%	\$0.06	28	40	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,799.48	15	-\$92.65	100%	at stock turnover	\$0.01	6	18	EIA 2011
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	2,294.30	15	\$733.93	100%	at stock turnover	\$0.01	1,686	1,681	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	6,824.42	5	\$10,810.00	5%	15%	\$0.07	6	8	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	10,081.08	5	\$610.00	15%	50%	\$0.00	30	43	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	14,442.71	12	\$40,000.00	4%	25%	\$0.12	74	108	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,215.54	16	\$390.00	1%	3%	\$0.01	1	2	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	16,468.38	10	\$1,600.00	25%	75%	\$0.00	83	44	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$1,780.00	7%	15%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	633.51	5	\$11,000.00	10%	25%	\$0.00	1	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	110.02	15	\$117.65	100%	at stock turnover	\$0.03	808	791	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	23.88	15	\$2.73	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	192.92	6	\$5.34	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	157.02	15	\$97.23	100%	at stock turnover	\$0.03	166	94	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,002.38	3	\$31,750.00	3%	11%	\$0.07	5	3	BEST Simulation
Warehouse - Refrigerated	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,107.65	7	\$1,400.00	1%	4%	\$0.07	1	1	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16.17	7	\$30.00	1%	3%	\$0.15	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	792.11	10	\$190.00	1%	3%	\$0.02	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	13	\$0.00	79%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,841.87	15	\$4,110.00	15%	75%	\$0.00	71	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,799.77	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	322.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse - Refrigerated	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,547.29	3	\$31,750.00	3%	11%	\$0.06	17	25	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,299.66	7	\$1,400.00	1%	2%	\$0.06	0	0	Developed from RTF
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	13	\$0.00	95%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	7,841.87	15	\$4,110.00	15%	75%	\$0.00	56	16	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,799.77	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	New	322.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse - Refrigerated	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,273.29	3	\$31,750.00	3%	11%	\$0.07	15	19	BEST Simulation
Warehouse - Refrigerated	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,060.60	6	\$15.46	100%	at stock turnover	\$0.00	13	14	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	720.59	4	\$2,650.00	10%	50%	\$0.26	34	39	Developed from RTF
Warehouse - Refrigerated	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	324.55	6	\$8.04	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	358.41	6	\$24.23	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,215.84	5	\$4,000.00	10%	25%	\$0.13	42	20	5th Plan
Warehouse - Refrigerated	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	838.23	6	\$4.84	77%	at stock turnover	\$0.00	8	8	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	447.54	6	\$5.72	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,007.45	6	\$20.08	89%	at stock turnover	\$0.00	48	49	Assumed same as Desktop
Warehouse - Refrigerated	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,060.60	6	\$15.46	100%	at stock turnover	\$0.00	12	12	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	New	791.71	4	\$2,650.00	10%	50%	\$0.22	25	27	Developed from RTF
Warehouse - Refrigerated	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	324.55	6	\$8.04	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	358.41	6	\$24.23	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,519.59	5	\$4,000.00	10%	25%	\$0.12	30	21	5th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	838.23	6	\$5.33	85%	at stock turnover	\$0.00	7	7	Assumed same as Desktop
Warehouse - Refrigerated	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	447.54	6	\$5.72	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,007.45	6	\$22.57	100%	at stock turnover	\$0.00	39	38	Assumed same as Desktop
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,796.08	9	\$1,422.80	92%	at stock turnover	\$0.01	241	221	EIA 2011
Warehouse - Refrigerated	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	287,739.81	8	\$2,540.00	13%	70%	\$0.00	2,874	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	23,247.52	9	\$90.00	5%	77%	\$0.00	293	233	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$2,310.00	12%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	16	\$160.00	2%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$20,000.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$5,560.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse - Refrigerated	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	31,823.16	10	\$8,458.06	92%	at stock turnover	\$0.02	462	403	EIA 2011
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,796.08	9	\$1,551.58	100%	at stock turnover	\$0.01	225	204	EIA 2011
Warehouse - Refrigerated	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	339,578.59	8	\$2,540.00	13%	70%	\$0.00	2,420	698	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	21,627.74	9	\$90.00	5%	77%	\$0.00	194	165	PacifiCorp Program Data
Warehouse - Refrigerated	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$2,310.00	12%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	16	\$160.00	2%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$20,000.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$5,560.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse - Refrigerated	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	New	31,823.16	10	\$9,223.62	100%	at stock turnover	\$0.02	491	452	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,842.03	15	\$31,750.00	20%	65%	\$0.05	19	24	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,461.92	18	\$60.00	15%	50%	\$0.00	8	11	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,261.99	50	\$250,000.00	15%	25%	\$0.99	5	7	6th Plan
Warehouse - Refrigerated	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,550.94	45	\$126,270.00	15%	35%	\$0.07	19	25	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-263.37	20	\$820.00	15%	50%	\$0.01	-1	-2	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,802.30	20	\$35,000.00	15%	50%	\$0.09	9	12	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	272.79	45	\$77,100.00	15%	35%	\$0.10	1	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,313.92	3	\$61,000.00	10%	75%	\$0.08	31	123	6th Plan
Warehouse - Refrigerated	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,398.14	3	\$31,750.00	3%	11%	\$0.06	3	9	BEST Simulation
Warehouse - Refrigerated	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	861.25	15	\$22,000.00	15%	75%	\$0.00	7	0	6th Plan
Warehouse - Refrigerated	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,182.53	18	\$17,000.00	15%	35%	\$0.14	24	94	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	35,580.30	20	\$33,045.32	100%	at stock turnover	\$0.07	96	97	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	24,442.12	15	\$3,090.00	13%	50%	\$0.01	142	93	BEST Simulation
Warehouse - Refrigerated	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,738.37	20	\$400,000.00	10%	15%	\$0.12	6	6	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,026.25	3	\$96,000.00	10%	75%	\$0.14	16	16	6th Plan
Warehouse - Refrigerated	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	85%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,778.75	15	\$31,750.00	20%	65%	\$0.06	10	10	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,154.84	18	\$50.00	15%	50%	\$0.00	5	5	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,977.75	50	\$250,000.00	15%	25%	\$1.30	2	2	6th Plan
Warehouse - Refrigerated	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	296.21	45	\$126,270.00	15%	50%	\$0.09	1	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	488.73	20	\$820.00	15%	50%	\$0.02	2	2	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,120.65	20	\$35,000.00	15%	50%	\$0.09	5	5	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13.11	45	\$77,100.00	15%	50%	\$0.78	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,493.05	3	\$31,750.00	3%	11%	\$0.07	2	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	522.18	15	\$13,000.00	15%	75%	\$0.00	4	1	6th Plan
Warehouse - Refrigerated	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,020.31	18	\$17,000.00	15%	35%	\$0.23	12	30	DEER
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	New	30,632.43	20	\$30,180.82	100%	at stock turnover	\$0.08	44	45	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	15,388.42	15	\$3,090.00	19%	50%	\$0.02	57	44	BEST Simulation
Warehouse - Refrigerated	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,440.49	5	\$18,000.00	3%	75%	\$0.35	14	15	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	412.53	7	\$1,400.00	1%	4%	\$0.07	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse - Refrigerated	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,459.05	5	\$4,000.00	1%	10%	\$0.00	2	0	AEG study for LA Dept of Water & Power
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	9,605.39	5	\$1,320.00	25%	65%	\$0.01	9	2	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,239.82	15	\$1,010.00	15%	75%	\$0.00	4	0	Hawaii TRM
Warehouse - Refrigerated	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	156.39	15	\$30.00	15%	75%	\$0.01	1	1	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,223.52	15	\$4,420.00	16%	75%	\$0.14	8	8	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,168.62	20	\$12,500.00	1%	30%	\$0.11	14	29	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	799.17	13	\$40.72	77%	at stock turnover	\$0.00	3	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,295.98	5	\$18,000.00	3%	75%	\$0.35	14	1	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,155.30	20	\$400,000.00	10%	15%	\$0.12	2	2	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,193.72	5	\$18,000.00	6%	75%	\$0.35	8	9	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	420.19	7	\$1,400.00	1%	2%	\$0.06	0	0	Developed from RTF
Warehouse - Refrigerated	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse - Refrigerated	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,463.62	5	\$4,000.00	0%	75%	\$0.00	10	3	AEG study for LA Dept of Water & Power
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,579.39	5	\$1,320.00	25%	65%	\$0.01	6	9	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,253.38	15	\$1,010.00	15%	75%	\$0.00	3	1	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	156.67	15	\$30.00	15%	75%	\$0.01	0	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,235.72	15	\$4,420.00	1%	75%	\$0.14	6	6	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,263.69	20	\$12,500.00	1%	30%	\$0.11	9	20	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	New	799.17	13	\$40.72	77%	at stock turnover	\$0.00	3	3	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,320.40	5	\$18,000.00	6%	75%	\$0.35	9	3	AEG study for PN&L

Washington Commercial Measure Assumptions

Table H-9 Table of Washington Commercial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	23,618.56	23	\$314,521.16	5%	at stock turnover	\$0.13	32	28	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft College bldg.	Existing	24,621.06	23	\$41,955.19	49%	at stock turnover	\$0.18	359	362	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	15,957.29	10	\$813.00	15%	75%	\$0.01	378	426	BEST Simulation
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	4,736.20	15	\$1,179.00	15%	75%	\$0.03	110	128	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	Existing	875.39	15	\$4,284.00	15%	75%	\$0.45	19	25	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	12,584.72	15	\$23,400.00	45%	50%	\$0.33	44	52	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	Existing	15,123.52	12	\$13,500.00	15%	25%	\$0.10	110	135	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	2,699.93	10	\$4,500.00	15%	35%	\$0.06	40	45	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	Existing	4,543.50	15	\$9,525.00	20%	65%	\$0.05	152	170	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	Existing	5,767.78	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	20,821.91	23	\$258,554.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	2,390.62	18	\$114.00	15%	50%	\$0.01	64	73	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	Existing	17,745.47	10	\$35,199.00	18%	75%	\$0.25	330	408	DEER
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	4,758.21	50	\$75,000.00	15%	25%	\$0.73	33	44	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	583.61	45	\$37,881.00	15%	35%	\$0.16	8	10	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	6,608.61	20	\$246.00	15%	35%	\$0.01	101	110	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	4,467.04	45	\$20,784.00	15%	35%	\$0.10	65	74	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	2,872.58	20	\$10,500.00	15%	50%	\$0.07	74	83	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	-2,034.21	45	\$23,130.00	15%	35%	\$0.05	-30	-34	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	Existing	9,505.44	15	\$52,386.10	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	Existing	4,865.38	3	\$18,300.00	10%	75%	\$0.26	224	262	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	Existing	7,765.01	23	\$62,058.79	29%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	Existing	0.00	15	\$154,779.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	3,808.30	3	\$9,525.00	3%	29%	\$0.17	72	96	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	Existing	48,070.68	23	\$63,480.03	12%	at stock turnover	\$0.14	22	22	BEST Simulation
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	12,735.09	10	\$813.00	15%	75%	\$0.01	71	88	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	Existing	18,758.21	4	\$813.00	15%	75%	\$0.01	103	131	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	7,265.53	15	\$1,179.00	15%	75%	\$0.02	39	52	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	Existing	952.52	15	\$5,421.00	15%	75%	\$0.48	5	7	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	14,566.92	20	\$120,000.00	10%	30%	\$0.10	16	16	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	21,631.09	23	\$311,795.81	6%	at stock turnover	\$0.14	4	3	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft College bldg.	New	14,733.11	23	\$32,956.91	55%	at stock turnover	\$0.23	37	37	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	9,921.13	10	\$813.00	15%	75%	\$0.01	17	17	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	4,343.76	15	\$1,179.00	15%	75%	\$0.03	7	7	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	New	466.45	15	\$4,284.00	15%	75%	\$0.75	1	1	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	New	2,737.96	3	\$28,800.00	10%	75%	\$0.47	10	10	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	1,859.36	15	\$23,400.00	45%	50%	\$3.03	1	1	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	New	8,449.61	12	\$13,500.00	15%	25%	\$0.18	5	5	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	1,581.70	10	\$4,500.00	15%	50%	\$0.07	3	3	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	New	2,673.05	15	\$9,525.00	20%	65%	\$0.06	7	7	BEST Simulation
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	New	5,767.78	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	19,059.37	23	\$256,314.41	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	1,269.94	18	\$114.00	15%	35%	\$0.03	1	1	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	New	9,841.35	10	\$35,199.00	18%	75%	\$0.42	5	5	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	2,671.36	50	\$75,000.00	15%	25%	\$1.22	1	1	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	-374.77	45	\$37,881.00	15%	50%	\$1.00	-1	-1	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	3,597.69	20	\$246.00	15%	50%	\$0.01	7	7	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	2,512.04	45	\$20,784.00	15%	50%	\$0.11	5	5	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	1,676.29	20	\$10,500.00	15%	50%	\$0.08	3	3	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	-23.45	45	\$23,130.00	15%	50%	\$0.32	0	0	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	New	8,440.78	15	\$52,293.43	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	New	7,101.98	23	\$61,521.05	33%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	New	0.00	15	\$154,779.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	New	2,129.83	3	\$9,525.00	3%	29%	\$0.21	3	3	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	New	32,009.93	23	\$49,865.23	14%	at stock turnover	\$0.16	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	6,423.82	10	\$813.00	15%	75%	\$0.02	3	3	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	New	9,219.25	4	\$813.00	15%	75%	\$0.02	4	4	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	5,690.75	15	\$1,179.00	15%	75%	\$0.02	2	2	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	New	474.80	15	\$5,421.00	15%	75%	\$0.97	0	0	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	146.16	15	\$9,525.00	20%	65%	\$0.05	11	17	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	387.23	5	\$11,814.00	15%	25%	\$5.16	6	13	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	296.78	10	\$3,327.00	33%	60%	\$1.18	13	26	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	Existing	2,268.20	10	\$5,208.00	15%	30%	\$0.26	56	108	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	146.19	15	-\$9.82	100%	at stock turnover	-\$0.03	0	1	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	186.40	15	\$77.77	100%	at stock turnover	\$0.01	110	103	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	39.70	15	\$9.53	100%	at stock turnover	\$0.00	364	358	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	9.54	15	\$1.42	100%	at stock turnover	\$0.00	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	143.58	3	\$18,300.00	10%	75%	\$0.26	16	24	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	35.61	6	\$1.29	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	28.99	15	\$23.41	100%	at stock turnover	\$0.05	4	2	EIA 2011
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	125.46	3	\$9,525.00	3%	29%	\$0.17	5	11	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	708.83	20	\$120,000.00	10%	30%	\$0.10	1	2	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	New	112.63	3	\$28,800.00	10%	75%	\$0.47	1	1	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	128.33	15	\$9,525.00	20%	65%	\$0.06	1	1	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	New	327.16	5	\$11,814.00	15%	25%	\$5.65	0	1	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	284.39	10	\$3,327.00	44%	60%	\$1.13	0	1	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	New	1,943.13	10	\$5,208.00	15%	30%	\$0.29	3	5	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	146.19	15	-\$9.82	100%	at stock turnover	-\$0.03	0	0	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	186.40	15	\$77.77	100%	at stock turnover	\$0.00	9	9	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	39.70	15	\$9.53	100%	at stock turnover	\$0.00	31	31	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	9.54	15	\$1.42	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	35.61	6	\$1.29	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	28.99	15	\$23.41	100%	at stock turnover	\$0.05	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	105.89	3	\$9,525.00	3%	29%	\$0.21	0	0	BEST Simulation
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	Existing	16,417.46	15	\$88.46	21%	at stock turnover	\$0.00	72	71	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,673.21	10	\$93.96	21%	at stock turnover	\$0.01	26	22	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	Existing	2,836.60	18	\$398.74	21%	at stock turnover	\$0.02	10	10	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	Existing	3,012.56	10	\$211.48	21%	at stock turnover	\$0.01	31	27	Developed from RTF "ComCookingConvectionOven" v2.0
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	New	16,417.46	15	\$123.84	29%	at stock turnover	\$0.00	10	9	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	New	1,673.21	10	\$131.54	29%	at stock turnover	\$0.01	3	3	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	New	2,836.60	18	\$558.23	29%	at stock turnover	\$0.02	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	New	3,012.56	10	\$296.07	29%	at stock turnover	\$0.01	3	3	Developed from RTF "ComCookingConvectionOven" v2.0
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	16,130.13	23	\$46,649.04	5%	at stock turnover	\$0.13	20	17	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	-6,744.24	15	\$23,400.00	45%	50%	\$0.34	-7	-7	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	7,953.62	10	\$4,500.00	15%	35%	\$0.06	33	34	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	114,194.17	15	\$3,573.00	15%	25%	\$0.00	195	195	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Energy Management System	per 30,000 sqft College bldg.	Existing	13,388.88	15	\$9,525.00	20%	65%	\$0.05	126	130	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	24,726.50	23	\$43,940.98	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	-1,565.63	18	\$114.00	15%	50%	\$0.01	-12	-12	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	18,537.36	45	\$37,881.00	15%	35%	\$0.16	76	80	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	-1,789.18	20	\$246.00	15%	35%	\$0.01	-8	-8	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	13,141.80	45	\$20,784.00	15%	35%	\$0.10	54	57	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	10,312.44	20	\$10,500.00	15%	50%	\$0.07	75	78	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	42,962.94	45	\$23,130.00	15%	35%	\$0.05	182	185	BEST Simulation
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	Existing	15,462.29	3	\$18,300.00	10%	75%	\$0.26	205	217	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	Existing	0.00	14	\$101,028.00	3%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	11,260.62	3	\$9,525.00	3%	29%	\$0.17	60	67	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	71,339.05	20	\$120,000.00	10%	30%	\$0.10	19	19	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	15,150.41	23	\$47,682.90	6%	at stock turnover	\$0.14	2	2	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	New	14,427.25	3	\$28,800.00	10%	75%	\$0.47	12	12	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	-1,449.86	15	\$23,400.00	45%	50%	\$3.03	0	0	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	7,758.52	10	\$4,500.00	15%	50%	\$0.07	4	4	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	114,194.17	15	\$3,573.00	15%	25%	\$0.00	12	12	Developed from RTF
College	Heating	Energy Management System	per 30,000 sqft College bldg.	New	13,112.85	15	\$9,525.00	20%	65%	\$0.06	8	8	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	21,516.53	23	\$43,560.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	-1,759.53	18	\$114.00	15%	35%	\$0.03	0	0	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	3,399.25	45	\$37,881.00	15%	50%	\$1.00	2	2	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	-2,052.34	20	\$246.00	15%	50%	\$0.01	-1	-1	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	12,299.75	45	\$20,784.00	15%	50%	\$0.11	6	6	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	10,020.79	20	\$10,500.00	15%	50%	\$0.08	5	5	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	5,636.47	45	\$23,130.00	15%	50%	\$0.32	3	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	New	0.00	14	\$101,028.00	6%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	New	10,537.00	3	\$9,525.00	3%	29%	\$0.21	4	4	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	873.79	15	\$9,525.00	20%	65%	\$0.05	62	103	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	498.32	15	-\$33.47	100%	at stock turnover	-\$0.03	2	3	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	635.35	15	\$265.10	100%	at stock turnover	\$0.01	456	427	EIA 2011
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	5,652.95	5	\$12,789.00	5%	15%	\$0.36	29	63	Illinois TRM
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	Existing	9,064.15	5	\$735.00	15%	50%	\$0.02	177	335	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	5,152.59	12	\$12,000.00	3%	25%	\$0.21	175	370	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	Existing	786.92	16	\$462.00	1%	3%	\$0.05	2	6	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	5,633.62	10	\$1,917.00	7%	45%	\$0.04	244	481	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 30,000 sqft College bldg.	Existing	0.00	8	\$2,148.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	Existing	438.78	5	\$3,300.00	10%	25%	\$0.97	2	8	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	161.35	15	\$38.73	100%	at stock turnover	\$0.00	2,450	2,416	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	38.76	15	\$5.78	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	826.02	3	\$18,300.00	10%	75%	\$0.26	83	141	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	183.62	6	\$6.63	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	149.44	15	\$120.71	100%	at stock turnover	\$0.05	334	204	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	750.32	3	\$9,525.00	3%	29%	\$0.17	31	76	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	4,296.86	20	\$120,000.00	10%	30%	\$0.10	9	14	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	New	704.25	3	\$28,800.00	10%	75%	\$0.47	5	7	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	777.85	15	\$9,525.00	20%	65%	\$0.06	4	6	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	498.32	15	-\$33.47	100%	at stock turnover	-\$0.03	0	0	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	635.35	15	\$265.10	100%	at stock turnover	\$0.00	39	37	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	New	4,974.33	5	\$12,789.00	5%	15%	\$0.40	2	3	Illinois TRM
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	New	7,926.42	5	\$735.00	15%	50%	\$0.02	9	15	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	4,418.45	12	\$12,000.00	4%	25%	\$0.24	9	14	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	New	700.44	16	\$462.00	1%	3%	\$0.05	0	0	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	New	4,868.58	10	\$1,917.00	22%	45%	\$0.04	5	8	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft College bldg.	New	0.00	8	\$2,148.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	New	286.71	5	\$3,300.00	10%	25%	\$1.40	0	0	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	161.35	15	\$38.73	100%	at stock turnover	\$0.00	211	209	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	38.76	15	\$5.78	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	183.62	6	\$6.63	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	149.44	15	\$120.71	100%	at stock turnover	\$0.05	29	16	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	642.07	3	\$9,525.00	3%	29%	\$0.21	2	3	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	373.49	7	\$1,398.00	1%	4%	\$0.13	1	1	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	Existing	5.42	7	\$30.00	1%	3%	\$1.05	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	Existing	267.12	10	\$195.00	1%	3%	\$0.11	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	Existing	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	Existing	708.65	15	\$96.00	15%	75%	\$0.02	33	33	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	Existing	753.97	10	\$174.66	36%	at stock turnover	\$0.03	19	17	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	Existing	270.57	10	\$331.84	90%	at stock turnover	\$0.18	16	15	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	Existing	10.48	5	\$60.00	15%	75%	\$1.18	0	0	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	378.69	3	\$9,525.00	3%	29%	\$0.17	30	28	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	373.53	7	\$1,398.00	1%	2%	\$0.13	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	New	5.47	7	\$3.00	1%	3%	\$0.11	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	New	710.38	15	\$96.00	15%	75%	\$0.02	2	2	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	New	753.97	10	\$209.59	43%	at stock turnover	\$0.04	2	2	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	New	270.57	10	\$367.49	100%	at stock turnover	\$0.20	1	1	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	New	10.12	5	\$60.00	15%	75%	\$1.19	0	0	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	New	355.01	3	\$9,525.00	3%	29%	\$0.21	2	2	BEST Simulation
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	5,029.84	6	\$37.74	100%	at stock turnover	\$0.00	150	158	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	Existing	691.55	4	\$795.00	10%	50%	\$0.31	153	178	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	Existing	297.08	6	\$7.36	100%	at stock turnover	\$0.01	9	9	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	Existing	874.88	6	\$59.15	100%	at stock turnover	\$0.01	10	11	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	Existing	2,110.86	5	\$1,200.00	10%	25%	\$0.13	183	205	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	Existing	255.76	6	\$1.92	100%	at stock turnover	\$0.00	14	15	Assumed same as Desktop
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,365.53	6	\$17.46	100%	at stock turnover	\$0.00	9	10	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	Existing	734.11	5	\$5.51	100%	at stock turnover	\$0.00	57	62	Assumed same as Desktop
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	New	5,029.84	6	\$37.74	100%	at stock turnover	\$0.00	12	12	ENERGY STAR Calculator
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	New	658.79	4	\$795.00	10%	50%	\$0.32	9	10	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	New	297.08	6	\$7.36	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	New	874.88	6	\$59.15	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	New	2,050.07	5	\$1,200.00	10%	25%	\$0.14	11	11	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	New	255.76	6	\$1.92	100%	at stock turnover	\$0.00	1	1	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	New	1,365.53	6	\$17.46	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	New	734.11	5	\$5.51	100%	at stock turnover	\$0.00	4	4	Assumed same as Desktop
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	Existing	624.95	9	\$18.70	27%	at stock turnover	\$0.00	4	4	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	Existing	1,672.49	8	\$2,544.00	0%	25%	\$0.26	10	10	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	Existing	0.81	9	\$102.00	0%	25%	\$19.67	0	0	PacificCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	Existing	211.08	15	\$315.00	0%	25%	\$0.17	6	6	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	Existing	414.59	15	\$5,220.00	0%	25%	\$1.40	11	12	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	Existing	366.98	4	\$4,524.00	0%	25%	\$3.50	1	1	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	Existing	1,441.56	10	\$111.14	27%	at stock turnover	\$0.02	26	22	EIA 2011
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	New	624.95	9	\$26.17	37%	at stock turnover	\$0.01	0	0	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	New	1,673.53	8	\$2,544.00	0%	25%	\$0.26	1	1	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	New	0.81	9	\$102.00	0%	25%	\$19.67	0	0	PacificCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	New	207.60	15	\$315.00	0%	25%	\$0.17	0	0	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	New	408.28	15	\$5,220.00	0%	25%	\$1.43	1	1	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	New	367.46	4	\$4,524.00	0%	25%	\$3.50	0	0	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	New	1,441.56	10	\$155.60	37%	at stock turnover	\$0.02	3	3	EIA 2011
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	0.00	15	\$23,400.00	45%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	Existing	1,930.25	15	\$9,525.00	20%	65%	\$0.05	57	76	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	1,055.93	18	\$114.00	15%	50%	\$0.01	26	36	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	2,203.72	50	\$75,000.00	15%	25%	\$0.73	14	23	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	1,224.22	20	\$10,500.00	15%	50%	\$0.07	28	37	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	227.00	45	\$23,130.00	15%	35%	\$0.05	3	4	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	Existing	2,238.37	3	\$18,300.00	10%	75%	\$0.26	92	127	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	1,629.89	3	\$9,525.00	3%	29%	\$0.17	27	49	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	Existing	581.86	15	\$6,600.00	15%	75%	\$1.18	22	31	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	Existing	5,560.49	18	\$5,100.00	15%	35%	\$0.09	71	97	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	Existing	28,025.66	20	\$48,593.50	100%	at stock turnover	\$0.18	105	106	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	Existing	16,438.55	15	\$3,858.00	13%	50%	\$0.03	422	527	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	7,022.90	20	\$120,000.00	10%	30%	\$0.10	7	7	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	New	1,416.57	3	\$28,800.00	10%	75%	\$0.47	5	5	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	0.00	15	\$23,400.00	45%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	New	1,280.48	15	\$9,525.00	20%	65%	\$0.06	3	3	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	710.26	18	\$114.00	15%	35%	\$0.03	1	1	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	1,374.73	50	\$75,000.00	15%	25%	\$1.22	1	1	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	0.00	45	\$37,881.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	808.17	20	\$10,500.00	15%	50%	\$0.08	1	1	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	61.51	45	\$23,130.00	15%	50%	\$0.32	0	0	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	New	1,029.96	3	\$9,525.00	3%	29%	\$0.21	1	1	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	New	366.44	15	\$3,900.00	15%	75%	\$1.05	1	1	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	New	3,536.08	18	\$5,100.00	15%	35%	\$0.14	4	4	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	New	28,356.18	20	\$48,570.99	100%	at stock turnover	\$0.18	3	4	BEST Simulation
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	New	11,079.04	15	\$3,858.00	19%	50%	\$0.04	18	18	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	5,902.41	5	\$5,400.00	3%	75%	\$0.19	124	133	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	1,532.38	7	\$1,398.00	1%	4%	\$0.13	1	1	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	Existing	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	Existing	6,338.38	5	\$1,200.00	1%	10%	\$0.04	17	18	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	Existing	16,368.47	5	\$993.00	25%	65%	\$0.01	74	75	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	Existing	2,269.42	15	\$66.00	15%	25%	\$0.00	7	7	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	Existing	170.25	15	\$9.00	15%	75%	\$0.01	3	3	DEER
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	Existing	3,964.46	15	\$2,421.00	16%	75%	\$0.07	70	72	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	Existing	12,562.49	20	\$37,500.00	1%	30%	\$0.26	104	115	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	Existing	1,363.66	13	\$120.51	35%	at stock turnover	\$0.01	28	27	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	6,163.38	5	\$5,400.00	3%	75%	\$0.19	131	137	AEG study for PN&L
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	18,621.93	20	\$120,000.00	10%	30%	\$0.10	7	7	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	5,558.73	5	\$5,400.00	6%	75%	\$0.19	7	7	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	1,443.07	7	\$1,398.00	1%	2%	\$0.13	0	0	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	New	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	New	6,409.71	5	\$1,200.00	0%	75%	\$0.04	9	9	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	New	16,329.41	5	\$993.00	25%	65%	\$0.01	4	4	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	New	2,263.61	15	\$66.00	15%	25%	\$0.00	0	0	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	New	170.61	15	\$9.00	15%	75%	\$0.01	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	New	3,865.88	15	\$2,421.00	1%	75%	\$0.07	5	5	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	New	11,879.56	20	\$37,500.00	1%	30%	\$0.26	6	6	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	New	1,363.66	13	\$120.51	35%	at stock turnover	\$0.01	3	2	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	5,779.50	5	\$5,400.00	6%	75%	\$0.19	7	7	AEG study for PN&L
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	660,791.31	23	\$978,474.77	8%	at stock turnover	\$0.01	1	1	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	Existing	386,180.82	23	\$197,016.25	19%	at stock turnover	\$0.05	3	3	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	262,154.61	10	\$4,070.00	15%	75%	\$0.00	2	2	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	33,037.89	15	\$11,165.00	15%	75%	\$0.03	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	Existing	11,778.65	15	\$4,105.00	15%	75%	\$0.03	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	194,339.38	15	\$39,000.00	45%	50%	\$0.02	1	1	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	Existing	301,438.75	15	\$105,000.00	10%	75%	\$0.03	12	17	E3T Website
Data Center	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	Existing	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	45,738.30	10	\$7,500.00	15%	35%	\$0.02	1	1	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	227,679.99	15	\$17,860.00	15%	25%	\$0.00	0	0	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	82,558.07	15	\$15,875.00	20%	65%	\$0.01	2	3	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	Existing	161,603.59	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	582,451.11	23	\$805,311.26	7%	at stock turnover	\$0.01	1	1	BEST Simulation
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	5,356.00	18	\$110.00	15%	50%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	Existing	337,311.85	10	\$33,725.00	18%	75%	\$0.01	5	6	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	185,049.08	15	\$1,300.00	15%	75%	\$0.00	8	8	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	81,451.86	50	\$125,000.00	15%	75%	\$0.06	3	4	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	42,683.49	45	\$63,135.00	15%	35%	\$0.05	1	1	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	29,990.56	20	\$410.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	75,838.45	45	\$34,640.00	15%	35%	\$0.03	1	1	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	49,016.17	20	\$17,500.00	15%	50%	\$0.02	1	1	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	Existing	266,301.13	15	\$167,740.03	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	82,760.32	3	\$30,500.00	10%	75%	\$0.06	3	4	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	Existing	517,768.32	23	\$1,003,773.05	45%	at stock turnover	\$0.20	2	3	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$148,300.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	Existing	655,608.23	23	\$298,094.16	19%	at stock turnover	\$0.05	6	6	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	183,655.47	10	\$4,070.00	15%	75%	\$0.00	1	2	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	241,006.40	4	\$4,070.00	15%	75%	\$0.00	2	2	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	24,542.47	15	\$11,165.00	15%	75%	\$0.04	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	Existing	10,571.99	15	\$51,340.00	15%	75%	\$0.37	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	312,685.48	20	\$200,000.00	10%	15%	\$0.03	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	546,642.35	23	\$822,792.55	9%	at stock turnover	\$0.01	1	1	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	New	377,250.02	23	\$166,372.20	18%	at stock turnover	\$0.05	1	1	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	234,205.63	10	\$4,070.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	29,913.06	15	\$11,165.00	15%	75%	\$0.03	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$4,105.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	New	58,984.38	3	\$48,000.00	10%	75%	\$0.12	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	28,184.32	15	\$39,000.00	45%	50%	\$0.11	0	0	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	New	218,372.36	15	\$105,000.00	10%	75%	\$0.04	1	1	E3T Website
Data Center	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	New	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	33,948.44	10	\$7,500.00	15%	50%	\$0.02	0	0	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	44,402.53	15	\$17,860.00	15%	25%	\$0.02	0	0	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	New	57,366.40	15	\$15,875.00	20%	65%	\$0.02	0	0	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	New	161,603.59	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	479,836.29	23	\$677,180.57	8%	at stock turnover	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	25,792.28	18	\$105.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	New	256,097.55	10	\$33,725.00	18%	75%	\$0.02	0	0	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	144,582.73	15	\$1,300.00	15%	75%	\$0.00	1	1	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	60,345.25	50	\$125,000.00	15%	75%	\$0.08	0	0	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	-3,554.98	45	\$63,135.00	15%	50%	\$1.05	0	0	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	48,527.84	20	\$410.00	15%	50%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	55,263.60	45	\$34,640.00	15%	50%	\$0.04	0	0	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	35,980.44	20	\$17,500.00	15%	50%	\$0.02	0	0	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	-460.76	45	\$38,550.00	15%	50%	\$0.71	0	0	BEST Simulation
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	New	233,047.38	15	\$159,117.43	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	New	424,823.86	23	\$844,065.69	42%	at stock turnover	\$0.21	1	1	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	New	0.00	15	\$148,300.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	New	627,566.61	23	\$251,728.38	21%	at stock turnover	\$0.04	2	2	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	147,181.09	10	\$4,070.00	15%	75%	\$0.00	0	0	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	New	195,150.05	4	\$4,070.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	21,244.88	15	\$11,165.00	15%	75%	\$0.04	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$51,340.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	185.30	15	\$15,875.00	20%	65%	\$0.01	0	0	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	505.49	5	\$960.00	15%	25%	\$0.32	0	0	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	45.81	10	\$1,095.00	33%	60%	\$2.41	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	Existing	2,902.80	10	\$1,715.00	15%	30%	\$0.06	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	306.79	15	-\$13.54	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	391.16	15	\$107.25	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	193.81	15	\$41.73	100%	at stock turnover	\$0.01	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	45.35	15	\$4.44	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	183.70	3	\$30,500.00	10%	75%	\$0.06	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	32.72	6	\$0.78	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	26.63	15	\$14.13	100%	at stock turnover	\$0.03	0	0	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	858.85	20	\$200,000.00	10%	15%	\$0.03	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	141.05	3	\$48,000.00	10%	75%	\$0.12	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	155.48	15	\$15,875.00	20%	65%	\$0.02	0	0	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	414.89	5	\$960.00	15%	25%	\$0.36	0	0	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	44.84	10	\$1,095.00	44%	60%	\$2.30	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	New	2,433.09	10	\$1,715.00	15%	30%	\$0.07	0	0	AEG research & analysis
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	306.79	15	-\$13.54	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	391.16	15	\$107.25	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	193.81	15	\$41.73	100%	at stock turnover	\$0.01	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	45.35	15	\$4.44	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	32.72	6	\$0.78	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	26.63	15	\$14.13	100%	at stock turnover	\$0.03	0	0	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	7,426.14	15	\$6.93	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	756.85	10	\$7.36	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,283.09	18	\$31.24	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,362.68	10	\$16.57	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	7,426.14	15	\$7.62	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	756.85	10	\$8.10	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,283.09	18	\$34.37	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,362.68	10	\$18.23	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	4,624.40	23	\$64,620.43	8%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	-12,255.02	15	\$39,000.00	45%	50%	\$0.02	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	5,047.69	10	\$7,500.00	15%	35%	\$0.02	0	0	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	70,158.04	15	\$17,860.00	15%	25%	\$0.01	0	0	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	8,550.01	15	\$15,875.00	20%	65%	\$0.01	0	0	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	1,404.33	23	\$62,259.37	7%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	-920.62	18	\$110.00	15%	50%	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	-11,261.01	15	\$1,300.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	33,466.84	45	\$63,135.00	15%	35%	\$0.05	0	0	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	-2,584.51	20	\$410.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	8,404.00	45	\$34,640.00	15%	35%	\$0.03	0	0	BPA
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	6,602.07	20	\$17,500.00	15%	50%	\$0.02	0	0	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	9,862.09	3	\$30,500.00	10%	75%	\$0.06	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	Existing	0.00	14	\$223,915.00	3%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	43,215.04	20	\$200,000.00	10%	15%	\$0.03	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	9,432.28	23	\$56,878.47	9%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	New	9,088.27	3	\$48,000.00	10%	75%	\$0.12	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	-3,733.19	15	\$39,000.00	45%	50%	\$0.11	0	0	BEST Simulation
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	4,699.97	10	\$7,500.00	15%	50%	\$0.02	0	0	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	71,061.50	15	\$17,860.00	15%	25%	\$0.02	0	0	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	New	7,943.68	15	\$15,875.00	20%	65%	\$0.02	0	0	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	25,599.39	23	\$52,353.52	8%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	2,533.84	18	\$105.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	-9,938.42	15	\$1,300.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	8,998.26	45	\$63,135.00	15%	50%	\$1.05	0	0	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	-8,607.96	20	\$410.00	15%	50%	\$0.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	7,650.34	45	\$34,640.00	15%	50%	\$0.04	0	0	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	6,070.36	20	\$17,500.00	15%	50%	\$0.02	0	0	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	3,447.93	45	\$38,550.00	15%	50%	\$0.71	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	New	0.00	14	\$223,915.00	6%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	2,818.33	15	\$15,875.00	20%	65%	\$0.01	0	0	BEST Simulation
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	529.21	15	-\$27.48	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	674.74	15	\$217.66	100%	at stock turnover	\$0.00	1	1	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	15,862.09	5	\$36,900.00	5%	15%	\$0.37	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	Existing	24,906.46	5	\$2,135.00	15%	50%	\$0.02	0	1	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	14,979.77	12	\$20,000.00	3%	25%	\$0.12	0	1	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	Existing	2,274.98	16	\$1,345.00	1%	3%	\$0.04	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	16,251.45	10	\$5,565.00	7%	45%	\$0.04	1	1	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	Existing	0.00	25	\$61,500.00	15%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$6,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	Existing	2,055.74	5	\$5,500.00	10%	25%	\$0.34	0	0	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	220.47	15	\$42.41	100%	at stock turnover	\$0.00	6	5	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	52.97	15	\$6.33	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	2,526.13	3	\$30,500.00	10%	75%	\$0.06	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	181.92	6	\$5.40	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	148.06	15	\$98.23	100%	at stock turnover	\$0.04	1	1	EIA 2011
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	11,721.20	20	\$200,000.00	10%	15%	\$0.03	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	1,989.72	3	\$48,000.00	10%	75%	\$0.12	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	2,192.93	15	\$15,875.00	20%	65%	\$0.02	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	529.21	15	-\$27.48	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	674.74	15	\$217.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	12,748.01	5	\$36,900.00	5%	15%	\$0.45	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	New	19,779.55	5	\$2,135.00	15%	50%	\$0.02	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	11,705.10	12	\$20,000.00	4%	25%	\$0.15	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	New	1,791.72	16	\$1,345.00	1%	3%	\$0.06	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	12,452.33	10	\$5,565.00	22%	45%	\$0.05	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	New	0.00	25	\$61,500.00	18%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Data Center bldg.	New	0.00	8	\$6,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	New	1,195.22	5	\$5,500.00	10%	25%	\$0.58	0	0	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	220.47	15	\$42.41	100%	at stock turnover	\$0.00	1	1	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	52.97	15	\$6.33	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	181.92	6	\$5.40	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	148.06	15	\$98.23	100%	at stock turnover	\$0.04	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	6,801.34	7	\$6,985.00	1%	4%	\$0.12	0	0	Developed from RTF
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	Existing	99.58	7	\$155.00	1%	3%	\$0.30	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	Existing	4,863.87	10	\$975.00	1%	3%	\$0.03	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	Existing	42,444.26	15	\$18,860.00	15%	75%	\$0.05	2	2	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	Existing	706.00	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	Existing	126.68	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	7,766.76	7	\$6,985.00	1%	2%	\$0.11	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	New	113.73	7	\$10.00	1%	3%	\$0.02	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	New	42,541.00	15	\$18,860.00	15%	75%	\$0.05	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	New	706.00	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	New	126.68	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	New	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	Existing	548,482.47	20	\$500,000.00	10%	50%	\$0.08	24	30	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	Existing	1,116,602.23	3	\$52,500.00	10%	15%	\$0.02	6	8	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	76,153.53	6	\$571.40	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	Existing	18,727.30	4	\$1,325.00	10%	50%	\$0.02	4	4	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	5,997.17	6	\$148.65	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	13,245.94	6	\$895.59	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	55,818.97	5	\$2,000.00	10%	25%	\$0.01	4	4	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	3,097.85	6	\$9.30	40%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	16,539.73	6	\$211.47	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,111,461.32	5	\$8,339.66	100%	at stock turnover	\$0.00	77	83	Assumed same as Desktop
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	New	524,330.59	20	\$150,000.00	10%	50%	\$0.03	3	3	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	New	1,070,343.18	3	\$52,500.00	10%	15%	\$0.02	1	1	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	76,153.53	6	\$571.40	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	New	19,529.58	4	\$1,325.00	10%	50%	\$0.02	1	1	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	5,997.17	6	\$148.65	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	13,245.94	6	\$895.59	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	58,362.39	5	\$2,000.00	10%	25%	\$0.01	1	1	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	3,097.85	6	\$10.23	44%	at stock turnover	\$0.00	0	0	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	16,539.73	6	\$211.47	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,111,461.32	5	\$8,339.66	100%	at stock turnover	\$0.00	12	13	Assumed same as Desktop
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$13,155.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	Existing	288.19	9	\$1.65	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	Existing	0.38	9	\$515.00	0%	10%	\$215.42	0	0	PacificCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$29,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$26,105.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$16,370.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	Existing	664.76	10	\$9.83	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	New	0.00	5	\$7,735.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	New	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	New	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	New	288.19	9	\$1.82	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	New	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	New	0.38	9	\$515.00	0%	10%	\$215.42	0	0	PacificCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	New	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	New	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	New	0.00	15	\$29,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	New	0.00	15	\$26,105.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	New	0.00	4	\$16,370.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	New	664.76	10	\$10.81	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	-265.34	15	\$39,000.00	45%	50%	\$0.02	0	0	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	49,485.08	15	\$15,875.00	20%	65%	\$0.01	1	2	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	28,628.45	18	\$110.00	15%	50%	\$0.00	1	1	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	-15,598.25	15	\$1,300.00	15%	75%	\$0.00	-1	-1	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	57,577.40	50	\$125,000.00	15%	75%	\$0.06	2	3	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	20,475.25	45	\$63,135.00	15%	35%	\$0.05	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	2,448.40	20	\$410.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	31,384.98	20	\$17,500.00	15%	50%	\$0.02	1	1	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	58,486.05	3	\$30,500.00	10%	75%	\$0.06	2	3	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	Existing	14,923.34	15	\$11,000.00	15%	75%	\$0.07	0	1	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	Existing	146,214.32	18	\$8,500.00	15%	35%	\$0.01	2	2	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	Existing	720,944.19	20	\$744,257.89	100%	at stock turnover	\$0.11	7	7	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	Existing	426,328.10	15	\$8,550.00	13%	50%	\$0.00	10	12	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	165,503.22	20	\$200,000.00	10%	15%	\$0.03	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	New	34,183.41	3	\$48,000.00	10%	75%	\$0.12	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	2,030.04	15	\$39,000.00	45%	50%	\$0.11	0	0	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	New	30,173.91	15	\$15,875.00	20%	65%	\$0.02	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	26,946.53	18	\$105.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	-11,103.42	15	\$1,300.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	34,956.19	50	\$125,000.00	15%	75%	\$0.08	0	0	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	931.96	45	\$63,135.00	15%	50%	\$1.05	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	827.67	20	\$410.00	15%	50%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	19,045.19	20	\$17,500.00	15%	50%	\$0.02	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	1,448.21	45	\$38,550.00	15%	50%	\$0.71	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	New	9,317.74	15	\$6,500.00	15%	75%	\$0.07	0	0	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	New	89,713.96	18	\$8,500.00	15%	35%	\$0.01	0	0	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	New	655,310.49	20	\$728,780.06	100%	at stock turnover	\$0.11	1	1	BEST Simulation
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	New	265,787.49	15	\$8,550.00	19%	50%	\$0.00	1	1	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	2,731.93	5	\$9,000.00	3%	75%	\$0.67	0	0	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	4,059.06	7	\$6,985.00	1%	4%	\$0.12	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	Existing	15,923.35	20	\$5,585.00	1%	7%	\$0.03	0	0	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	2,931.49	5	\$2,000.00	1%	10%	\$0.15	0	0	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	Existing	7,824.36	5	\$550.00	25%	65%	\$0.02	0	0	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	Existing	991.11	15	\$575.00	15%	75%	\$0.06	0	0	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	Existing	150.90	15	\$15.00	15%	75%	\$0.01	0	0	DEER
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	1,836.94	15	\$6,985.00	16%	75%	\$0.41	0	0	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	Existing	5,820.41	20	\$62,500.00	1%	30%	\$0.90	0	0	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	Existing	651.46	13	\$35.54	68%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	2,852.07	5	\$9,000.00	3%	75%	\$0.67	0	0	AEG study for PN&L
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	9,530.70	20	\$200,000.00	10%	15%	\$0.03	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	2,641.03	5	\$9,000.00	6%	75%	\$0.68	0	0	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	4,082.60	7	\$6,985.00	1%	2%	\$0.11	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	New	15,961.35	20	\$5,585.00	1%	8%	\$0.03	0	0	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	New	2,939.74	5	\$2,000.00	0%	75%	\$0.15	0	0	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	New	7,804.46	5	\$550.00	25%	65%	\$0.02	0	0	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	New	991.48	15	\$575.00	15%	75%	\$0.06	0	0	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	New	151.21	15	\$15.00	15%	75%	\$0.01	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	New	1,768.13	15	\$6,985.00	1%	75%	\$0.41	0	0	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	New	5,648.59	20	\$62,500.00	1%	30%	\$0.90	0	0	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	New	651.46	13	\$35.54	68%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	2,745.89	5	\$9,000.00	6%	75%	\$0.68	0	0	AEG study for PN&L
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	31,723.62	23	\$331,602.41	4%	at stock turnover	\$0.02	34	30	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	Existing	13,363.61	23	\$5,033.97	6%	at stock turnover	\$0.04	43	44	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	9,356.48	10	\$814.00	15%	75%	\$0.01	29	32	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	1,133.26	15	\$2,234.00	15%	75%	\$0.18	3	4	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	Existing	478.83	15	\$1,806.00	15%	75%	\$0.34	1	2	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	11,657.92	15	\$15,600.00	45%	50%	\$0.22	40	47	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	De-stratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	Existing	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	1,947.28	10	\$3,000.00	15%	35%	\$0.09	28	32	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	3,277.19	15	\$6,350.00	20%	65%	\$0.06	109	120	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	Existing	6,082.51	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	8,143.73	23	\$149,998.32	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	87.82	18	\$48.00	15%	25%	\$0.01	1	1	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	Existing	12,917.72	10	\$14,828.00	18%	75%	\$0.16	243	291	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	7,125.48	15	\$260.00	15%	75%	\$0.06	324	348	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	3,425.32	50	\$50,000.00	15%	25%	\$0.69	23	31	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	11,400.90	45	\$25,254.00	15%	35%	\$0.17	161	186	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	3,227.76	45	\$13,856.00	15%	35%	\$0.15	47	53	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	2,071.75	20	\$7,000.00	15%	50%	\$0.11	53	59	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	-1,445.12	45	\$15,420.00	15%	35%	\$0.10	-21	-24	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	Existing	10,023.17	15	\$6,313.48	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	3,482.75	3	\$12,200.00	10%	75%	\$0.31	156	184	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	Existing	8,192.05	23	\$65,429.13	82%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$65,206.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	2,544.16	3	\$6,350.00	4%	27%	\$0.18	41	57	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	Existing	22,542.84	23	\$7,616.62	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$2,234.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$10,268.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	10,261.48	20	\$80,000.00	10%	15%	\$0.12	5	5	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	23,020.45	23	\$270,250.75	4%	at stock turnover	\$0.02	6	5	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	New	11,501.75	23	\$4,464.54	7%	at stock turnover	\$0.04	9	10	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	7,532.34	10	\$814.00	15%	75%	\$0.01	3	3	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	1,022.32	15	\$2,234.00	15%	75%	\$0.21	0	0	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$1,806.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	New	1,982.31	3	\$19,200.00	10%	75%	\$0.60	13	14	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	3,341.52	15	\$15,600.00	45%	50%	\$0.66	2	2	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	New	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	Destratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	New	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	1,106.61	10	\$3,000.00	15%	50%	\$0.12	4	4	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,870.31	15	\$6,350.00	20%	65%	\$0.07	9	9	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	New	6,082.51	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	3,245.11	23	\$122,246.27	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	-126.01	18	\$74.00	15%	25%	\$0.05	0	0	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	New	7,178.21	10	\$14,828.00	18%	75%	\$0.29	7	7	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	1,929.01	50	\$50,000.00	15%	25%	\$1.15	2	2	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	480.27	45	\$25,254.00	15%	50%	\$2.61	2	2	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	1,804.07	45	\$13,856.00	15%	50%	\$0.19	7	7	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	1,162.62	20	\$7,000.00	15%	50%	\$0.13	4	4	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	-15.48	45	\$15,420.00	15%	50%	\$0.64	0	0	BEST Simulation
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	New	8,771.55	15	\$5,988.94	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	New	5,138.63	23	\$53,323.71	86%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	New	0.00	15	\$65,206.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,544.38	3	\$6,350.00	4%	27%	\$0.23	4	4	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	New	19,622.30	23	\$6,755.04	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	0.00	15	\$2,234.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$10,268.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	224.26	15	\$6,350.00	20%	65%	\$0.06	17	27	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	653.54	5	\$2,736.00	15%	25%	\$0.71	11	22	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	87.61	10	\$982.00	33%	60%	\$1.15	4	8	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	Existing	3,869.84	10	\$1,536.00	15%	30%	\$0.05	102	186	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	308.52	15	-\$7.33	100%	at stock turnover	-\$0.01	2	3	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	393.36	15	\$58.08	100%	at stock turnover	\$0.00	517	480	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	77.73	15	\$38.36	100%	at stock turnover	\$0.01	226	220	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.87	15	\$0.89	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	220.58	3	\$12,200.00	10%	75%	\$0.31	24	38	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	51.26	6	\$0.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	41.72	15	\$11.92	100%	at stock turnover	\$0.02	89	54	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	192.54	3	\$6,350.00	4%	27%	\$0.18	7	17	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	1,068.95	20	\$80,000.00	10%	15%	\$0.12	1	2	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	188.15	3	\$19,200.00	10%	75%	\$0.60	3	4	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	193.50	15	\$6,350.00	20%	65%	\$0.07	2	3	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	553.42	5	\$2,736.00	15%	25%	\$0.77	1	2	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	46.47	10	\$982.00	44%	60%	\$1.99	0	0	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	New	3,338.54	10	\$1,536.00	15%	30%	\$0.05	11	17	AEG research & analysis
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	308.52	15	-\$7.33	100%	at stock turnover	-\$0.01	0	1	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	393.36	15	\$58.08	100%	at stock turnover	\$0.00	91	85	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	77.73	15	\$38.36	100%	at stock turnover	\$0.01	40	40	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.87	15	\$0.89	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	51.26	6	\$0.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	41.72	15	\$11.92	100%	at stock turnover	\$0.02	17	9	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	163.91	3	\$6,350.00	4%	27%	\$0.23	1	1	BEST Simulation
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	17,343.58	15	\$243.59	55%	at stock turnover	-\$0.01	202	198	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	1,767.60	10	\$287.65	61%	at stock turnover	\$0.02	80	69	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	2,996.62	18	\$1,098.00	55%	at stock turnover	\$0.04	27	27	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	3,182.50	10	\$577.38	54%	at stock turnover	\$0.03	86	75	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	17,343.58	15	\$341.02	77%	at stock turnover	-\$0.01	56	54	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	1,767.60	10	\$402.71	85%	at stock turnover	\$0.03	18	17	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	2,996.62	18	\$1,537.20	77%	at stock turnover	\$0.06	6	6	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	3,182.50	10	\$808.34	76%	at stock turnover	\$0.04	20	18	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	3,709.47	23	\$6,480.62	4%	at stock turnover	\$0.02	3	3	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	-4,997.47	15	\$15,600.00	45%	50%	\$0.22	-4	-4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	2,766.17	10	\$3,000.00	15%	35%	\$0.09	9	9	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	37,762.62	15	\$3,572.00	15%	25%	\$0.01	7	7	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	4,657.14	15	\$6,350.00	20%	65%	\$0.06	33	32	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	7,546.85	23	\$5,828.35	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	10.22	18	\$48.00	15%	25%	\$0.01	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	-6,015.40	15	\$260.00	15%	75%	\$0.06	-55	-56	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	10.44	45	\$25,254.00	15%	35%	\$0.17	0	0	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	4,505.71	45	\$13,856.00	15%	35%	\$0.15	14	14	BPA
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	3,586.40	20	\$7,000.00	15%	50%	\$0.11	19	19	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	14,458.95	45	\$15,420.00	15%	35%	\$0.10	44	45	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	5,346.27	3	\$12,200.00	10%	75%	\$0.31	52	54	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	Existing	0.00	14	\$94,610.00	3%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	3,884.64	3	\$6,350.00	4%	27%	\$0.18	13	14	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	24,496.27	20	\$80,000.00	10%	15%	\$0.12	2	2	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	3,199.61	23	\$5,445.86	4%	at stock turnover	\$0.02	1	1	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	New	5,073.16	3	\$19,200.00	10%	75%	\$0.60	6	6	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	-1,017.62	15	\$15,600.00	45%	50%	\$0.66	0	0	BEST Simulation
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	2,641.71	10	\$3,000.00	15%	50%	\$0.12	2	2	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	37,762.62	15	\$3,572.00	15%	25%	\$0.01	1	1	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	New	4,464.87	15	\$6,350.00	20%	65%	\$0.07	4	4	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	5,952.78	23	\$4,750.01	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	23.49	18	\$74.00	15%	25%	\$0.05	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	258.82	45	\$25,254.00	15%	50%	\$2.61	0	0	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	4,300.08	45	\$13,856.00	15%	50%	\$0.19	3	3	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	3,382.52	20	\$7,000.00	15%	50%	\$0.13	2	2	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	1,924.71	45	\$15,420.00	15%	50%	\$0.64	1	1	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	New	0.00	14	\$94,610.00	6%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	3,683.72	3	\$6,350.00	4%	27%	\$0.23	2	2	BEST Simulation
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,908.90	15	\$6,350.00	20%	65%	\$0.06	139	229	BEST Simulation
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,040.51	15	-\$24.73	100%	at stock turnover	-\$0.01	6	8	EIA 2011
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,326.64	15	\$195.87	100%	at stock turnover	\$0.00	1,546	1,437	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	10,390.23	5	\$13,522.00	5%	15%	\$0.20	54	118	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	Existing	16,423.73	5	\$698.00	15%	50%	\$0.01	326	622	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	11,357.10	12	\$8,000.00	3%	25%	\$0.06	395	831	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	Existing	1,719.13	16	\$440.00	1%	3%	\$0.02	6	13	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	12,305.36	10	\$1,822.00	7%	45%	\$0.02	545	1,071	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	Existing	0.00	25	\$24,600.00	15%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 20,000 sqft Grocery bldg.	Existing	0.00	8	\$2,018.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	Existing	1,387.57	5	\$2,200.00	10%	25%	\$0.21	9	26	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	291.49	15	\$143.86	100%	at stock turnover	\$0.01	4,781	4,639	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	63.26	15	\$3.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,794.69	3	\$12,200.00	10%	75%	\$0.31	183	311	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	261.15	6	\$3.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	212.55	15	\$60.75	100%	at stock turnover	\$0.02	1,340	811	EIA 2011
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,576.81	3	\$6,350.00	4%	27%	\$0.18	57	149	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	8,806.00	20	\$80,000.00	10%	15%	\$0.12	10	15	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	1,539.61	3	\$19,200.00	10%	75%	\$0.60	22	33	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,593.95	15	\$6,350.00	20%	65%	\$0.07	16	24	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,040.51	15	-\$24.73	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,326.64	15	\$195.87	100%	at stock turnover	\$0.00	274	255	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	8,891.28	5	\$13,522.00	5%	15%	\$0.23	7	10	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	New	13,702.83	5	\$698.00	15%	50%	\$0.01	36	53	Illinois TRM
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	9,930.29	12	\$8,000.00	4%	25%	\$0.07	45	68	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	New	1,490.35	16	\$440.00	1%	3%	\$0.02	1	1	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	10,357.10	10	\$1,822.00	22%	45%	\$0.02	24	36	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	New	0.00	25	\$24,600.00	18%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 20,000 sqft Grocery bldg.	New	0.00	8	\$2,018.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	New	1,144.38	5	\$2,200.00	10%	25%	\$0.24	1	2	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	291.49	15	\$143.86	100%	at stock turnover	\$0.01	854	834	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	63.26	15	\$3.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	261.15	6	\$3.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	212.55	15	\$60.75	100%	at stock turnover	\$0.02	254	137	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,342.73	3	\$6,350.00	4%	27%	\$0.23	7	10	BEST Simulation
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	80.45	7	\$1,398.00	1%	4%	\$0.79	0	0	Developed from RTF
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	Existing	1.18	7	\$30.00	1%	3%	\$4.85	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	Existing	57.53	10	\$194.00	1%	3%	\$0.50	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	Existing	0.00	13	\$0.00	35%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	Existing	1,721.04	15	\$10,756.00	15%	75%	\$0.74	32	32	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	Existing	282.40	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	Existing	50.67	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,350.92	3	\$6,350.00	4%	27%	\$0.19	44	43	BEST Simulation
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	46.06	7	\$1,398.00	1%	2%	\$1.39	0	0	Developed from RTF

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Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	New	0.67	7	\$2.00	1%	3%	\$0.57	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	New	0.00	13	\$0.00	42%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	New	1,728.29	15	\$10,756.00	15%	75%	\$0.74	5	5	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	New	282.40	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	New	50.67	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,312.96	3	\$6,350.00	4%	27%	\$0.23	6	5	BEST Simulation
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	745.00	6	\$5.59	100%	at stock turnover	\$0.00	23	24	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	Existing	16.22	4	\$530.00	10%	50%	\$9.00	4	4	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	146.67	6	\$2.33	64%	at stock turnover	\$0.00	3	3	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	129.58	6	\$8.76	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	47.64	5	\$800.00	10%	25%	\$3.88	4	4	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	378.83	6	\$2.84	100%	at stock turnover	\$0.00	21	22	Assumed same as Desktop
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	161.81	6	\$2.07	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	543.67	5	\$4.08	100%	at stock turnover	\$0.00	43	46	Assumed same as Desktop
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	New	0.00	20	\$60,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	745.00	6	\$5.59	100%	at stock turnover	\$0.00	4	4	ENERGY STAR Calculator
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	New	15.54	4	\$926.00	10%	50%	\$16.24	0	0	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	146.67	6	\$2.56	70%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	129.58	6	\$8.76	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	26.07	5	\$800.00	10%	25%	\$7.01	0	0	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	378.83	6	\$2.84	100%	at stock turnover	\$0.00	3	3	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	161.81	6	\$2.07	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	543.67	5	\$4.08	100%	at stock turnover	\$0.00	6	6	Assumed same as Desktop
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	Existing	47,657.83	5	\$2,632.00	10%	75%	\$0.26	5,185	5,283	Developed from RTF
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	Existing	283.44	8	\$196.00	10%	75%	\$0.11	31	32	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	Existing	8,257.70	5	\$2,532.00	10%	75%	\$0.07	452	455	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	Existing	939.83	9	\$104.54	99%	at stock turnover	\$0.02	82	76	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	Existing	7,603.62	8	\$2,542.00	25%	75%	\$0.06	318	323	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	Existing	2.34	9	\$104.00	0%	75%	\$6.67	0	0	PacifiCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$2,306.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	16	\$162.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	Existing	5,275.70	15	\$2,432.00	14%	75%	\$0.06	1,396	1,389	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	Existing	10,323.51	15	\$5,222.00	25%	75%	\$0.06	2,220	2,247	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	Existing	7,461.36	4	\$2,220.00	25%	75%	\$0.08	52	54	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	Existing	4,335.77	10	\$1,242.86	99%	at stock turnover	\$0.06	261	229	EIA 2011
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	New	48,417.00	5	\$1,548.00	10%	75%	\$0.26	662	662	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	New	165.51	8	\$196.00	10%	75%	\$0.19	2	2	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	New	8,471.52	5	\$2,532.00	10%	75%	\$0.07	58	58	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	New	939.83	9	\$105.70	100%	at stock turnover	\$0.02	14	12	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	New	4,207.52	8	\$2,542.00	35%	75%	\$0.10	18	18	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	New	2.36	9	\$104.00	0%	75%	\$6.67	0	0	PacificCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	New	0.00	4	\$2,306.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	New	0.00	16	\$162.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	New	5,312.02	15	\$2,432.00	0%	75%	\$0.05	215	216	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	New	10,414.98	15	\$5,222.00	35%	75%	\$0.06	224	225	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	New	7,505.23	4	\$2,220.00	35%	75%	\$0.08	5	5	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	New	4,335.77	10	\$1,256.68	100%	at stock turnover	\$0.07	55	50	EIA 2011
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$15,600.00	45%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$3,000.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,549.49	15	\$6,350.00	20%	65%	\$0.06	54	62	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	326.75	18	\$48.00	15%	25%	\$0.01	3	3	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	-476.71	15	\$260.00	15%	75%	\$0.05	-23	-25	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	1,765.30	50	\$50,000.00	15%	25%	\$0.69	13	17	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	0.00	45	\$25,254.00	15%	35%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	970.00	20	\$7,000.00	15%	50%	\$0.11	26	30	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	177.31	45	\$15,420.00	15%	35%	\$0.10	3	3	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,794.82	3	\$12,200.00	10%	75%	\$0.31	89	104	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,305.67	3	\$6,350.00	4%	27%	\$0.18	23	31	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	Existing	466.03	15	\$4,400.00	15%	75%	\$1.00	21	25	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	Existing	4,481.16	18	\$3,400.00	15%	35%	\$0.08	69	80	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	Existing	8,817.12	20	\$16,361.51	100%	at stock turnover	\$0.19	116	117	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	Existing	10,015.25	15	\$3,614.00	13%	50%	\$0.04	301	326	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	6,380.02	20	\$80,000.00	10%	15%	\$0.12	3	3	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	New	1,337.85	3	\$19,200.00	10%	75%	\$0.60	9	10	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	0.00	15	\$15,600.00	45%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	0.00	10	\$3,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,176.40	15	\$6,350.00	20%	65%	\$0.07	6	6	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	250.49	18	\$74.00	15%	25%	\$0.05	0	0	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	1,297.48	50	\$50,000.00	15%	25%	\$1.15	1	1	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	0.00	45	\$25,254.00	15%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	722.88	20	\$7,000.00	15%	50%	\$0.13	3	3	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	56.67	45	\$15,420.00	15%	50%	\$0.64	0	0	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	971.42	3	\$6,350.00	4%	27%	\$0.23	2	2	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	New	345.85	15	\$2,600.00	15%	75%	\$0.78	2	2	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	New	3,387.54	18	\$3,400.00	15%	35%	\$0.10	7	7	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	New	6,876.00	20	\$14,698.90	100%	at stock turnover	\$0.22	10	10	BEST Simulation
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	New	6,889.57	15	\$3,614.00	19%	50%	\$0.06	23	23	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	2,989.05	5	\$3,600.00	3%	75%	\$0.26	116	124	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	204.98	7	\$1,398.00	1%	4%	\$0.79	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	3,208.57	5	\$800.00	1%	10%	\$0.06	16	17	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	Existing	8,286.07	5	\$1,876.00	25%	65%	\$0.06	69	69	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$984.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	Existing	17.18	15	\$6.00	15%	75%	\$0.04	1	1	DEER
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	2,006.81	15	\$1,976.00	16%	75%	\$0.11	65	67	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	Existing	6,363.75	20	\$25,000.00	1%	30%	\$0.34	97	107	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	Existing	687.98	13	\$34.38	63%	at stock turnover	\$0.01	26	25	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	3,121.28	5	\$3,600.00	3%	75%	\$0.26	122	128	AEG study for PN&L
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	9,425.70	20	\$80,000.00	10%	15%	\$0.12	3	3	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	2,888.74	5	\$3,600.00	6%	75%	\$0.26	14	14	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	114.40	7	\$1,398.00	1%	2%	\$1.39	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	New	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	New	3,244.64	5	\$800.00	0%	75%	\$0.06	17	17	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	New	8,266.13	5	\$1,876.00	25%	65%	\$0.06	8	9	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$984.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	New	8.92	15	\$6.00	15%	75%	\$0.07	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	New	1,955.71	15	\$1,976.00	1%	75%	\$0.11	10	10	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	New	6,174.14	20	\$25,000.00	1%	30%	\$0.34	12	12	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	New	688.57	13	\$33.52	63%	at stock turnover	\$0.01	5	5	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	3,003.68	5	\$3,600.00	6%	75%	\$0.26	14	14	AEG study for PN&L
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	57,563.11	23	\$93,063.74	1%	at stock turnover	\$0.04	18	17	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	Existing	35,278.74	23	\$23,751.09	17%	at stock turnover	\$0.07	180	182	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	24,441.83	10	\$813.00	15%	75%	\$0.00	204	227	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	8,431.12	15	\$1,338.00	15%	75%	\$0.02	69	80	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	Existing	908.17	15	\$2,913.00	15%	75%	\$0.29	7	9	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	7,299.34	15	\$11,700.00	45%	50%	\$0.25	25	31	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	De-stratification Fans (HVLS)	per 30,000 sqft Health bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	4,750.69	10	\$4,500.00	15%	35%	\$0.04	69	82	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	39,734.10	15	\$3,573.00	15%	25%	\$0.00	1	1	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	Existing	7,977.97	15	\$9,525.00	20%	65%	\$0.03	263	309	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	Existing	14,042.09	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	50,664.41	23	\$76,472.89	1%	at stock turnover	\$0.03	15	15	BEST Simulation
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	3,012.49	18	\$42.00	15%	50%	\$0.00	81	97	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	Existing	31,172.05	10	\$23,940.00	18%	75%	\$0.09	594	791	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	8,497.34	50	\$75,000.00	15%	25%	\$0.33	58	84	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	3,154.26	45	\$37,881.00	15%	35%	\$0.20	43	54	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	10,219.73	20	\$246.00	15%	35%	\$0.01	155	176	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	7,861.29	45	\$20,784.00	15%	35%	\$0.06	114	135	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	5,054.76	20	\$10,500.00	15%	50%	\$0.04	128	152	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	-3,545.12	45	\$23,130.00	15%	35%	\$0.03	-52	-61	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	Existing	23,139.49	15	\$14,575.30	0%	at stock turnover	\$0.07	7	7	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	8,662.55	3	\$18,300.00	10%	75%	\$0.14	394	484	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	Existing	44,992.09	23	\$95,485.47	11%	at stock turnover	\$0.22	61	61	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	Existing	0.00	15	\$105,276.00	15%	75%	\$10.00	0	0	DEER
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	6,779.62	3	\$9,525.00	4%	28%	\$0.09	117	172	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	Existing	69,913.50	23	\$36,678.60	69%	at stock turnover	\$0.05	176	176	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	18,535.45	10	\$813.00	15%	75%	\$0.01	577	716	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	Existing	24,977.87	4	\$813.00	15%	75%	\$0.01	767	976	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	12,244.03	15	\$1,338.00	15%	75%	\$0.01	369	486	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	Existing	1,006.44	15	\$6,153.00	15%	75%	\$0.53	28	42	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	31,773.02	20	\$120,000.00	10%	25%	\$0.05	63	67	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	63,615.32	23	\$73,293.08	1%	at stock turnover	\$0.03	6	6	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	New	26,528.37	23	\$16,290.15	17%	at stock turnover	\$0.06	42	42	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	15,582.75	10	\$813.00	15%	75%	\$0.01	22	23	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	6,073.22	15	\$1,338.00	15%	75%	\$0.02	9	9	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$2,913.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	New	6,523.26	3	\$28,800.00	10%	75%	\$0.27	55	59	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	50%	\$10.00	0	0	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	Destratification Fans (HVLS)	per 30,000 sqft Health bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	3,449.68	10	\$4,500.00	15%	50%	\$0.04	16	17	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	32,308.05	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	New	5,829.41	15	\$9,525.00	20%	65%	\$0.03	34	37	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	New	14,042.09	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	56,054.84	23	\$60,226.83	1%	at stock turnover	\$0.02	5	5	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	1,928.64	18	\$27.00	15%	35%	\$0.00	5	5	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	New	21,141.40	10	\$23,941,035.00	18%	75%	\$118.31	27	29	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	6,365.20	50	\$75,000.00	15%	25%	\$0.49	8	9	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	292.94	45	\$37,881.00	15%	50%	\$0.45	1	1	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	5,528.76	45	\$20,784.00	15%	50%	\$0.07	25	27	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	3,656.13	20	\$10,500.00	15%	50%	\$0.05	17	18	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	-52.18	45	\$23,130.00	15%	50%	\$0.22	0	0	BEST Simulation
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	New	20,250.00	15	\$13,826.06	0%	at stock turnover	\$0.08	1	1	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	New	49,878.59	23	\$75,200.33	11%	at stock turnover	\$0.16	22	22	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	New	0.00	15	\$56,802.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	New	4,737.02	3	\$9,525.00	4%	28%	\$0.11	15	16	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	New	53,255.75	23	\$24,647.71	69%	at stock turnover	\$0.05	599	598	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	13,054.31	10	\$813.00	15%	75%	\$0.01	70	76	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	New	17,685.24	4	\$813.00	15%	75%	\$0.01	95	103	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	9,099.93	15	\$1,338.00	15%	75%	\$0.01	49	53	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$6,153.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	128.01	15	\$9,525.00	20%	65%	\$0.03	10	15	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	345.98	5	\$1,920.00	15%	25%	\$0.94	6	11	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	22.86	10	\$1,431.00	33%	60%	\$6.41	1	2	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	Existing	2,013.55	10	\$2,241.00	15%	30%	\$0.13	51	96	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	414.56	15	-\$13.77	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	528.56	15	\$109.09	100%	at stock turnover	\$0.00	286	267	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	75.02	15	\$16.30	100%	at stock turnover	\$0.01	104	100	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	17.11	15	\$1.26	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	116.76	3	\$18,300.00	10%	75%	\$0.14	12	20	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	69.30	6	\$1.24	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	56.40	15	\$22.53	100%	at stock turnover	\$0.03	21	13	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	109.89	3	\$9,525.00	4%	28%	\$0.09	4	9	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	594.79	20	\$120,000.00	10%	25%	\$0.05	3	4	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	95.41	3	\$28,800.00	10%	75%	\$0.27	2	3	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	107.68	15	\$9,525.00	20%	65%	\$0.03	1	2	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	280.64	5	\$1,920.00	15%	25%	\$1.06	1	1	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	27.59	10	\$1,431.00	44%	60%	\$4.85	0	0	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	New	1,645.79	10	\$2,241.00	15%	30%	\$0.14	7	11	AEG research & analysis
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	414.56	15	-\$13.77	100%	at stock turnover	-\$0.01	0	0	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	528.56	15	\$109.09	100%	at stock turnover	\$0.00	67	63	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	75.02	15	\$16.30	100%	at stock turnover	\$0.01	25	24	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	17.11	15	\$1.26	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	69.30	6	\$1.24	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	56.40	15	\$22.53	100%	at stock turnover	\$0.02	5	3	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	89.64	3	\$9,525.00	4%	28%	\$0.11	1	1	BEST Simulation
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	43,055.94	15	\$589.28	53%	at stock turnover	-\$0.01	477	467	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	4,388.11	10	\$944.72	81%	at stock turnover	\$0.03	255	222	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	7,439.19	18	\$2,656.27	53%	at stock turnover	\$0.04	63	63	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	7,900.66	10	\$1,836.51	70%	at stock turnover	\$0.03	267	232	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	New	43,055.94	15	\$825.00	75%	at stock turnover	-\$0.01	176	171	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	New	4,388.11	10	\$1,170.65	100%	at stock turnover	\$0.04	70	63	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	New	7,439.19	18	\$3,718.77	75%	at stock turnover	\$0.05	20	20	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	New	7,900.66	10	\$2,571.12	98%	at stock turnover	\$0.05	82	74	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	25,622.17	23	\$28,796.73	1%	at stock turnover	\$0.04	8	8	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	-3,453.60	15	\$11,700.00	45%	50%	\$0.25	-1	-1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	12,605.76	10	\$4,500.00	15%	35%	\$0.04	11	11	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	184,073.65	15	\$3,573.00	15%	25%	\$0.00	1	1	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	Existing	21,523.04	15	\$9,525.00	20%	65%	\$0.03	43	44	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	29,725.23	23	\$25,701.55	1%	at stock turnover	\$0.03	9	9	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	-4,766.14	18	\$42.00	15%	50%	\$0.00	-7	-8	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	11,832.10	45	\$37,881.00	15%	35%	\$0.20	10	11	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	-6,551.07	20	\$246.00	15%	35%	\$0.01	-6	-6	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	20,828.10	45	\$20,784.00	15%	35%	\$0.06	18	19	BPA
Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	16,344.16	20	\$10,500.00	15%	50%	\$0.04	25	26	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	67,416.15	45	\$23,130.00	15%	35%	\$0.03	59	61	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	24,675.58	3	\$18,300.00	10%	75%	\$0.14	69	72	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	Existing	0.00	14	\$73,443.00	3%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	17,957.85	3	\$9,525.00	4%	28%	\$0.09	19	20	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	105,683.11	20	\$120,000.00	10%	25%	\$0.05	12	12	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	12,716.25	23	\$23,384.35	1%	at stock turnover	\$0.03	1	1	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	New	21,574.49	3	\$28,800.00	10%	75%	\$0.27	10	10	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	50%	\$10.00	0	0	BEST Simulation
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	11,493.70	10	\$4,500.00	15%	50%	\$0.04	3	3	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	182,405.39	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	New	19,425.91	15	\$9,525.00	20%	65%	\$0.03	6	6	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	30,920.61	23	\$20,241.43	1%	at stock turnover	\$0.02	3	3	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	20,668.68	18	\$27.00	15%	35%	\$0.00	3	3	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	5,859.59	45	\$37,881.00	15%	50%	\$0.45	2	2	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	18,383.58	45	\$20,784.00	15%	50%	\$0.07	5	5	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	14,845.06	20	\$10,500.00	15%	50%	\$0.05	4	4	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	8,428.81	45	\$23,130.00	15%	50%	\$0.22	2	2	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	New	0.00	14	\$73,443.00	6%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	New	15,748.76	3	\$9,525.00	4%	28%	\$0.11	3	3	BEST Simulation
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	2,088.28	15	\$9,525.00	20%	65%	\$0.03	143	245	BEST Simulation
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	556.41	15	-\$19.45	100%	at stock turnover	-\$0.01	2	4	EIA 2011
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	709.42	15	\$154.12	100%	at stock turnover	\$0.00	666	622	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	12,294.73	5	\$15,285.00	5%	15%	\$0.19	62	137	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	Existing	19,678.41	5	\$1,395.00	15%	50%	\$0.01	380	728	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	12,418.13	12	\$12,000.00	3%	25%	\$0.09	407	903	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	Existing	1,863.92	16	\$879.00	1%	3%	\$0.03	6	14	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	13,440.26	10	\$3,633.00	7%	45%	\$0.03	560	1,163	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	Existing	0.00	25	\$18,450.00	15%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft Health bldg.	Existing	0.00	8	\$4,020.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	Existing	2,485.78	5	\$3,300.00	10%	25%	\$0.17	15	46	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	203.80	15	\$46.61	100%	at stock turnover	\$0.01	5,510	5,312	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	46.48	15	\$3.61	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	1,975.82	3	\$18,300.00	10%	75%	\$0.14	190	335	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	202.02	6	\$3.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	164.42	15	\$69.15	100%	at stock turnover	\$0.03	2,127	1,294	EIA 2011
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	1,725.03	3	\$9,525.00	4%	28%	\$0.09	61	174	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	9,841.23	20	\$120,000.00	10%	25%	\$0.05	41	63	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	1,626.81	3	\$28,800.00	10%	75%	\$0.27	29	45	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	1,782.35	15	\$9,525.00	20%	65%	\$0.03	22	35	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	556.41	15	-\$19.45	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	709.42	15	\$154.12	100%	at stock turnover	\$0.00	157	148	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	10,520.28	5	\$15,285.00	5%	15%	\$0.22	10	15	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	New	16,598.92	5	\$1,395.00	15%	50%	\$0.01	55	84	Illinois TRM
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	10,279.03	12	\$12,000.00	4%	25%	\$0.10	59	90	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	New	1,582.48	16	\$879.00	1%	3%	\$0.04	1	1	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	New	11,147.18	10	\$3,633.00	22%	45%	\$0.03	33	51	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	New	0.00	25	\$18,450.00	18%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft Health bldg.	New	0.00	8	\$4,020.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	New	1,862.68	5	\$3,300.00	10%	25%	\$0.22	2	4	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	203.80	15	\$46.61	100%	at stock turnover	\$0.01	1,310	1,271	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	46.48	15	\$3.61	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	202.02	6	\$3.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	164.42	15	\$69.15	100%	at stock turnover	\$0.02	503	271	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	1,429.08	3	\$9,525.00	4%	28%	\$0.11	10	15	BEST Simulation
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	309.79	7	\$1,398.00	1%	4%	\$0.17	1	1	Developed from RTF
Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	Existing	4.54	7	\$30.00	1%	3%	\$1.26	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	Existing	221.53	10	\$195.00	1%	3%	\$0.13	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	Existing	0.00	13	\$0.00	74%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	Existing	2,622.24	15	\$7,716.00	15%	75%	\$0.35	102	101	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	Existing	423.60	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	Existing	76.01	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	3,940.14	3	\$9,525.00	4%	28%	\$0.09	165	157	BEST Simulation
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	595.88	7	\$1,398.00	1%	2%	\$0.14	0	0	Developed from RTF

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Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	New	8.78	7	\$3.00	1%	3%	\$0.07	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	New	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	New	2,633.30	15	\$7,716.00	15%	75%	\$0.35	20	20	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	New	423.60	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	New	76.01	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	New	3,707.08	3	\$9,525.00	4%	28%	\$0.11	28	27	BEST Simulation
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	5,695.61	6	\$42.74	100%	at stock turnover	\$0.00	169	178	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	Existing	106.55	4	\$795.00	10%	50%	\$2.08	24	27	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	448.53	6	\$11.12	100%	at stock turnover	\$0.01	13	14	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	990.68	6	\$66.98	100%	at stock turnover	\$0.01	12	12	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	313.62	5	\$1,200.00	10%	25%	\$0.90	27	30	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	579.23	6	\$4.35	100%	at stock turnover	\$0.00	31	33	Assumed same as Desktop
Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	1,237.02	6	\$15.82	100%	at stock turnover	\$0.00	8	9	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	831.27	5	\$6.24	100%	at stock turnover	\$0.00	64	69	Assumed same as Desktop
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	New	5,695.61	6	\$42.74	100%	at stock turnover	\$0.00	37	37	ENERGY STAR Calculator
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	New	197.41	4	\$795.00	10%	50%	\$1.10	7	8	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	New	448.53	6	\$11.12	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	New	990.68	6	\$66.98	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	New	586.55	5	\$1,200.00	10%	25%	\$0.47	8	9	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	New	579.23	6	\$4.35	100%	at stock turnover	\$0.00	7	7	Assumed same as Desktop

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Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	New	1,237.02	6	\$15.82	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	New	831.27	5	\$6.24	100%	at stock turnover	\$0.00	12	13	Assumed same as Desktop
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	Existing	1,031.16	9	\$104.84	90%	at stock turnover	\$0.02	21	20	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	Existing	350.20	8	\$2,544.00	0%	25%	\$1.24	7	7	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	Existing	0.67	9	\$102.00	0%	25%	\$23.85	0	0	PacifiCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	Existing	326.12	15	\$14,280.00	0%	25%	\$4.88	30	33	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	Existing	672.27	15	\$5,220.00	0%	25%	\$0.88	62	67	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	Existing	623.96	4	\$1,047.00	0%	25%	\$0.49	4	4	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	Existing	2,378.56	10	\$623.22	90%	at stock turnover	\$0.06	155	135	EIA 2011
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	New	1,031.16	9	\$115.32	99%	at stock turnover	\$0.02	5	4	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	New	685.93	8	\$2,544.00	0%	25%	\$0.65	2	2	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	New	0.67	9	\$102.00	0%	25%	\$23.85	0	0	PacificCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	New	320.06	15	\$14,280.00	0%	25%	\$4.98	5	6	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	New	657.70	15	\$5,220.00	0%	25%	\$0.90	11	11	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	New	623.61	4	\$1,047.00	0%	25%	\$0.49	1	1	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	New	2,378.56	10	\$685.54	99%	at stock turnover	\$0.06	42	39	EIA 2011
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	0.00	15	\$11,700.00	45%	50%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	Existing	5,864.74	15	\$9,525.00	20%	65%	\$0.03	179	229	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	3,235.07	18	\$42.00	15%	50%	\$0.00	84	108	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	6,772.02	50	\$75,000.00	15%	25%	\$0.33	44	68	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	3,717.23	20	\$10,500.00	15%	50%	\$0.04	87	113	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	683.06	45	\$23,130.00	15%	35%	\$0.03	9	12	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	6,880.79	3	\$18,300.00	10%	75%	\$0.14	299	389	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	5,006.99	3	\$9,525.00	4%	28%	\$0.09	80	133	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	Existing	1,787.95	15	\$6,600.00	15%	75%	\$0.39	70	93	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	Existing	17,332.25	18	\$5,100.00	15%	35%	\$0.03	238	301	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	Existing	65,231.78	20	\$45,666.07	100%	at stock turnover	\$0.07	118	120	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	Existing	50,593.24	15	\$2,805.00	13%	50%	\$0.01	1,368	1,612	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	17,746.98	20	\$120,000.00	10%	25%	\$0.05	38	38	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	New	3,679.37	3	\$28,800.00	10%	75%	\$0.27	34	34	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	50%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	New	3,294.84	15	\$9,525.00	20%	65%	\$0.03	21	21	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	4,186.70	18	\$27.00	15%	35%	\$0.00	12	12	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	3,566.66	50	\$75,000.00	15%	25%	\$0.49	5	5	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	309.05	45	\$37,881.00	15%	50%	\$0.45	2	2	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	2,079.54	20	\$10,500.00	15%	50%	\$0.05	10	10	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	159.77	45	\$23,130.00	15%	50%	\$0.22	1	1	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

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Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	New	2,673.77	3	\$9,525.00	4%	28%	\$0.11	9	9	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	New	951.76	15	\$3,900.00	15%	75%	\$0.41	8	8	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	New	9,422.66	18	\$5,100.00	15%	35%	\$0.05	27	27	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	New	48,555.01	20	\$35,719.29	100%	at stock turnover	\$0.08	11	11	BEST Simulation
Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	New	28,508.00	15	\$2,805.00	19%	50%	\$0.01	124	124	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	12,474.57	5	\$5,400.00	3%	75%	\$0.09	168	181	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	993.67	7	\$1,398.00	1%	4%	\$0.17	1	1	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	Existing	75,739.65	20	\$1,116.00	0%	1%	\$0.00	12	12	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	Existing	13,325.42	5	\$1,200.00	1%	10%	\$0.02	23	24	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	Existing	34,660.67	5	\$993.00	25%	65%	\$0.01	100	101	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

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Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	Existing	4,472.50	15	\$594.00	15%	50%	\$0.01	30	31	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	Existing	117.42	15	\$9.00	15%	75%	\$0.01	1	1	DEER
Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	Existing	8,336.74	15	\$2,421.00	16%	75%	\$0.03	94	97	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	Existing	28,811.64	20	\$12,501.00	1%	30%	\$0.04	158	166	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	Existing	2,887.45	13	\$89.07	22%	at stock turnover	\$0.00	38	36	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	11,950.29	5	\$5,400.00	3%	75%	\$0.09	159	175	AEG study for PN&L
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	37,772.94	20	\$120,000.00	10%	25%	\$0.05	18	18	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	11,378.56	5	\$5,400.00	6%	75%	\$0.09	25	25	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	954.15	7	\$1,398.00	1%	2%	\$0.14	0	0	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	New	75,542.55	20	\$1,116.00	0%	1%	\$0.00	2	2	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	New	13,480.22	5	\$1,200.00	0%	75%	\$0.02	32	32	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	New	34,575.79	5	\$993.00	25%	65%	\$0.01	16	17	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	New	4,522.63	15	\$594.00	15%	50%	\$0.01	5	5	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	New	119.28	15	\$9.00	15%	75%	\$0.01	0	0	DEER

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Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	New	8,126.52	15	\$2,421.00	1%	75%	\$0.03	19	19	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	New	27,979.15	20	\$12,501.00	1%	30%	\$0.04	25	26	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	New	2,887.45	13	\$89.07	22%	at stock turnover	\$0.00	9	9	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	11,829.50	5	\$5,400.00	6%	75%	\$0.09	26	26	AEG study for PN&L
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 50,000 sqft Large Office bldg.	Existing	26,390.73	23	\$24,320.40	8%	at stock turnover	\$0.16	84	84	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	Existing	30,036.29	23	\$15,323.49	19%	at stock turnover	\$0.05	136	137	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	22,820.78	10	\$815.00	15%	75%	\$0.01	169	188	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	2,949.78	15	\$2,685.00	15%	75%	\$0.10	21	25	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	Existing	1,144.49	15	\$3,840.00	15%	75%	\$0.31	8	10	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	Existing	22,227.76	12	\$22,500.00	15%	30%	\$0.12	202	242	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

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Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	3,951.59	10	\$7,500.00	15%	35%	\$0.10	48	54	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	35,702.10	15	\$3,570.00	15%	25%	\$0.00	1	2	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	6,661.07	15	\$15,875.00	20%	65%	\$0.07	185	204	BEST Simulation
Large Office	Cooling	Geothermal Heat Pump - EER 14, COP 3.5	per 50,000 sqft Large Office bldg.	Existing	1,285.74	23	\$33.07	7%	at stock turnover	\$0.00	2	2	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	694.60	18	\$100.00	15%	50%	\$0.00	15	17	BEST Simulation
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	Existing	26,098.18	10	\$31,540.00	18%	75%	\$0.16	357	437	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	7,041.62	50	\$125,000.00	15%	25%	\$0.64	41	53	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	1,049.94	45	\$63,135.00	15%	35%	\$0.13	13	14	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	2,862.84	20	\$410.00	15%	35%	\$0.12	35	39	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	6,017.67	45	\$34,640.00	15%	35%	\$0.16	71	82	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	4,204.20	20	\$17,500.00	15%	50%	\$0.10	89	100	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	-2,948.65	45	\$38,550.00	15%	35%	\$0.10	-36	-40	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	Existing	20,712.31	15	\$13,046.45	1%	at stock turnover	\$0.07	8	7	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	7,158.55	3	\$30,500.00	10%	75%	\$0.34	272	316	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	Existing	40,272.44	23	\$82,477.87	44%	at stock turnover	\$0.21	173	174	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$138,680.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	5,189.44	3	\$15,875.00	3%	14%	\$0.21	33	47	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	Existing	50,991.75	23	\$23,185.10	19%	at stock turnover	\$0.05	399	398	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	14,699.07	10	\$815.00	15%	75%	\$0.01	103	124	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	19,752.38	4	\$815.00	15%	75%	\$0.01	137	168	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	2,088.28	15	\$2,685.00	15%	75%	\$0.12	14	18	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	Existing	1,167.86	15	\$12,355.00	15%	75%	\$0.91	7	11	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	27,999.82	20	\$200,000.00	10%	30%	\$0.13	56	58	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	New	29,341.67	23	\$12,940.06	21%	at stock turnover	\$0.05	54	55	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	21,131.60	10	\$815.00	15%	75%	\$0.01	25	26	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	3,228.64	15	\$2,685.00	15%	75%	\$0.08	4	4	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$3,840.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	New	5,285.54	3	\$48,000.00	10%	75%	\$0.60	34	36	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	New	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	New	16,417.01	12	\$22,500.00	15%	30%	\$0.15	25	26	Environment Design Guide, November 2007 (PDF)
Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	3,040.26	10	\$7,500.00	15%	50%	\$0.11	11	11	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	28,917.92	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	New	5,158.59	15	\$15,875.00	20%	65%	\$0.07	23	24	BEST Simulation
Large Office	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Large Office bldg.	New	12,569.17	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	39,266.82	23	\$58,017.43	7%	at stock turnover	\$0.13	21	21	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	1,759.10	18	\$100.00	15%	35%	\$0.00	4	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	New	19,381.74	10	\$31,540.00	18%	75%	\$0.19	17	17	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	5,160.89	50	\$125,000.00	15%	25%	\$0.82	5	5	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	-99.49	45	\$63,135.00	15%	50%	\$0.84	0	0	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	4,753.31	45	\$34,640.00	15%	50%	\$0.17	17	17	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	3,222.08	20	\$17,500.00	15%	50%	\$0.11	11	12	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	-41.28	45	\$38,550.00	15%	50%	\$0.60	0	0	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	New	18,125.91	15	\$12,375.80	1%	at stock turnover	\$0.08	1	1	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	New	34,806.46	23	\$72,328.34	49%	at stock turnover	\$0.22	45	45	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	New	0.00	15	\$138,680.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	3,825.47	3	\$15,875.00	3%	14%	\$0.25	4	4	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	New	48,810.74	23	\$19,578.87	21%	at stock turnover	\$0.04	115	115	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	12,026.80	10	\$815.00	15%	75%	\$0.01	14	15	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	New	16,019.29	4	\$815.00	15%	75%	\$0.01	18	20	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	2,441.90	15	\$2,685.00	15%	75%	\$0.10	3	3	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$12,355.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	239.88	15	\$15,875.00	20%	65%	\$0.07	14	23	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	713.58	5	\$960.00	15%	25%	\$0.23	9	19	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	63.65	10	\$1,095.00	33%	60%	\$1.73	2	5	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	Existing	4,134.24	10	\$1,715.00	15%	30%	\$0.05	84	163	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	400.66	15	-\$18.47	100%	at stock turnover	-\$0.02	1	2	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	510.84	15	\$146.34	100%	at stock turnover	\$0.00	357	333	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	82.08	15	\$18.46	100%	at stock turnover	\$0.01	236	230	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	19.21	15	\$1.97	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	234.89	3	\$30,500.00	10%	75%	\$0.34	20	33	6th Plan
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	86.79	6	\$2.15	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	70.64	15	\$39.17	100%	at stock turnover	\$0.04	108	66	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	204.18	3	\$15,875.00	3%	14%	\$0.21	3	7	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	1,107.76	20	\$200,000.00	10%	30%	\$0.13	4	7	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	188.90	3	\$48,000.00	10%	75%	\$0.60	2	4	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	200.53	15	\$15,875.00	20%	65%	\$0.07	2	3	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	571.84	5	\$960.00	15%	25%	\$0.26	1	2	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	61.38	10	\$1,095.00	44%	60%	\$1.64	0	0	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	New	3,459.67	10	\$1,715.00	15%	30%	\$0.05	10	15	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	400.66	15	-\$18.47	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	510.84	15	\$146.34	100%	at stock turnover	\$0.00	71	67	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	82.08	15	\$18.46	100%	at stock turnover	\$0.01	47	46	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	19.21	15	\$1.97	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	86.79	6	\$2.15	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	70.64	15	\$39.17	100%	at stock turnover	\$0.03	21	12	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	165.54	3	\$15,875.00	3%	14%	\$0.25	0	1	BEST Simulation
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	8,189.38	15	\$90.27	43%	at stock turnover	-\$0.01	60	59	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	834.63	10	\$170.11	76%	at stock turnover	\$0.03	38	33	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	1,414.96	18	\$406.90	43%	at stock turnover	\$0.03	8	8	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	1,502.73	10	\$330.77	66%	at stock turnover	\$0.03	39	34	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	8,189.38	15	\$108.32	52%	at stock turnover	-\$0.01	16	15	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	834.63	10	\$204.14	92%	at stock turnover	\$0.04	8	7	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	1,414.96	18	\$488.27	52%	at stock turnover	\$0.04	2	2	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	1,502.73	10	\$396.92	79%	at stock turnover	\$0.04	9	8	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 50,000 sqft Large Office bldg.	Existing	2,404.89	23	\$42,878.99	8%	at stock turnover	\$0.16	8	8	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	6,916.56	10	\$7,500.00	15%	35%	\$0.10	59	61	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	96,147.63	15	\$3,570.00	15%	25%	\$0.00	308	308	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	11,797.55	15	\$15,875.00	20%	65%	\$0.07	230	232	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 14, COP 3.5	per 50,000 sqft Large Office bldg.	Existing	258.53	23	\$67.27	7%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	-1,363.14	18	\$100.00	15%	50%	\$0.00	-21	-21	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	38,928.22	45	\$63,135.00	15%	35%	\$0.13	328	341	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	-2,640.60	20	\$410.00	15%	35%	\$0.12	-23	-23	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	11,256.82	45	\$34,640.00	15%	35%	\$0.16	93	98	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	8,967.74	20	\$17,500.00	15%	50%	\$0.10	133	137	BEST Simulation
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	36,990.19	45	\$38,550.00	15%	35%	\$0.10	318	324	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	13,397.53	3	\$30,500.00	10%	75%	\$0.34	360	381	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	Existing	0.00	14	\$220,410.00	3%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	9,705.75	3	\$15,875.00	3%	14%	\$0.21	44	50	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	61,443.92	20	\$200,000.00	10%	30%	\$0.13	75	75	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	New	14,558.48	23	\$128,152.10	8%	at stock turnover	\$0.23	14	13	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	New	12,539.19	3	\$48,000.00	10%	75%	\$0.60	49	50	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	6,682.32	10	\$7,500.00	15%	50%	\$0.11	14	14	AEG research & analysis
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	96,059.52	15	\$3,570.00	15%	25%	\$0.00	42	42	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	New	11,293.87	15	\$15,875.00	20%	65%	\$0.07	31	31	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	54,332.23	23	\$118,015.48	7%	at stock turnover	\$0.13	28	29	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	1,709.06	18	\$100.00	15%	35%	\$0.00	2	2	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	5,816.06	45	\$63,135.00	15%	50%	\$0.84	12	12	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	10,593.88	45	\$34,640.00	15%	50%	\$0.17	22	23	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	8,630.82	20	\$17,500.00	15%	50%	\$0.11	18	18	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	4,757.58	45	\$38,550.00	15%	50%	\$0.60	10	10	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	New	0.00	14	\$220,410.00	6%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	9,075.66	3	\$15,875.00	3%	14%	\$0.25	6	6	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	1,966.24	15	\$15,875.00	20%	65%	\$0.07	112	189	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	344.02	15	-\$15.86	100%	at stock turnover	-\$0.02	3	4	EIA 2011
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	438.62	15	\$125.65	100%	at stock turnover	\$0.00	726	678	EIA 2011
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	12,178.83	5	\$36,900.00	5%	15%	\$0.48	51	110	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	Existing	19,422.07	5	\$2,135.00	15%	50%	\$0.02	310	586	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	11,699.11	12	\$20,000.00	3%	25%	\$0.16	319	692	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	Existing	1,770.76	16	\$1,345.00	1%	3%	\$0.06	4	11	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	12,668.80	10	\$5,565.00	7%	45%	\$0.05	439	891	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	Existing	0.00	25	\$20,500.00	15%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$6,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	Existing	1,590.66	5	\$5,500.00	10%	25%	\$0.45	7	25	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	116.72	15	\$26.26	100%	at stock turnover	\$0.01	4,428	4,327	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	27.31	15	\$2.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	1,869.16	3	\$30,500.00	10%	75%	\$0.34	150	260	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	130.78	6	\$3.24	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	106.44	15	\$59.03	100%	at stock turnover	\$0.04	975	594	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,624.73	3	\$15,875.00	3%	14%	\$0.21	22	60	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	9,443.71	20	\$200,000.00	10%	30%	\$0.13	36	56	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	1,554.60	3	\$48,000.00	10%	75%	\$0.60	19	30	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	1,709.50	15	\$15,875.00	20%	65%	\$0.07	15	23	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	344.02	15	-\$15.86	100%	at stock turnover	-\$0.02	1	1	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	438.62	15	\$125.65	100%	at stock turnover	\$0.00	145	136	EIA 2011
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	10,595.79	5	\$36,900.00	5%	15%	\$0.53	7	10	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	New	16,811.57	5	\$2,135.00	15%	50%	\$0.02	38	58	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	9,777.97	12	\$20,000.00	4%	25%	\$0.18	38	59	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	New	1,539.39	16	\$1,345.00	1%	3%	\$0.07	1	1	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	10,698.71	10	\$5,565.00	22%	45%	\$0.05	22	33	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	New	0.00	25	\$20,500.00	18%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Large Office bldg.	New	0.00	8	\$6,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	New	1,024.21	5	\$5,500.00	10%	25%	\$0.65	1	2	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	116.72	15	\$26.26	100%	at stock turnover	\$0.01	878	862	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	27.31	15	\$2.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	130.78	6	\$3.24	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	106.44	15	\$59.03	100%	at stock turnover	\$0.03	192	104	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,359.29	3	\$15,875.00	3%	14%	\$0.25	3	4	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	117.31	7	\$1,395.00	1%	4%	\$0.19	0	0	Developed from RTF
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	Existing	1.71	7	\$30.00	1%	3%	\$3.35	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	Existing	83.56	10	\$195.00	1%	3%	\$0.35	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	Existing	2,021.58	15	\$12,385.00	15%	75%	\$0.73	78	77	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,601.43	3	\$15,875.00	3%	14%	\$0.22	27	26	BEST Simulation
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	125.21	7	\$1,395.00	1%	2%	\$0.19	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	New	2,028.02	15	\$12,385.00	15%	75%	\$0.73	12	12	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Large Office bldg.	New	126.68	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,552.27	3	\$15,875.00	3%	14%	\$0.25	4	4	BEST Simulation
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$500,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	33,236.02	6	\$249.38	100%	at stock turnover	\$0.00	808	853	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	Existing	1,047.82	4	\$1,325.00	10%	50%	\$0.35	178	202	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,543.43	6	\$162.19	100%	at stock turnover	\$0.01	159	168	ENERGY STAR Calculator
Large Office	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	5,780.98	6	\$390.87	100%	at stock turnover	\$0.01	56	59	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	3,093.22	5	\$2,000.00	10%	25%	\$0.15	198	224	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	563.34	6	\$1.69	40%	at stock turnover	\$0.00	10	11	Assumed same as Desktop
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,015.42	6	\$76.91	100%	at stock turnover	\$0.00	34	35	ENERGY STAR Calculator
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	New	0.00	20	\$150,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	33,236.02	6	\$249.38	100%	at stock turnover	\$0.00	148	148	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	New	1,084.38	4	\$1,325.00	10%	50%	\$0.34	25	27	Developed from RTF
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	6,543.43	6	\$162.19	100%	at stock turnover	\$0.01	29	29	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	3,215.77	5	\$2,000.00	10%	25%	\$0.14	28	30	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	563.34	6	\$1.86	44%	at stock turnover	\$0.00	2	2	Assumed same as Desktop
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	6,015.42	6	\$76.91	100%	at stock turnover	\$0.00	5	5	ENERGY STAR Calculator
Large Office	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	4,042.33	5	\$30.33	100%	at stock turnover	\$0.00	41	43	Assumed same as Desktop
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	Existing	433.43	9	\$21.89	45%	at stock turnover	\$0.01	3	3	EIA 2011
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	Existing	0.58	9	\$105.00	0%	10%	\$29.20	0	0	PacificCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$23,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$5,220.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$12,680.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	Existing	1,999.59	10	\$260.22	45%	at stock turnover	\$0.03	48	42	EIA 2011
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	New	0.00	5	\$1,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	New	433.43	9	\$26.26	54%	at stock turnover	\$0.01	1	1	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	New	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	New	0.58	9	\$105.00	0%	10%	\$29.20	0	0	PacifiCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	New	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	New	0.00	15	\$23,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	New	0.00	15	\$5,220.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	New	0.00	4	\$12,680.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	New	1,999.59	10	\$312.27	54%	at stock turnover	\$0.04	12	11	EIA 2011
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	5,852.74	15	\$15,875.00	20%	65%	\$0.07	153	188	BEST Simulation
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	3,153.67	18	\$100.00	15%	50%	\$0.00	70	84	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	6,757.98	50	\$125,000.00	15%	25%	\$0.64	38	54	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	127.35	45	\$63,135.00	15%	35%	\$0.13	1	2	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	-8.98	20	\$410.00	15%	35%	\$0.12	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	3,709.04	20	\$17,500.00	15%	50%	\$0.10	75	93	BEST Simulation
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	681.56	45	\$38,550.00	15%	35%	\$0.10	8	10	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	6,895.37	3	\$30,500.00	10%	75%	\$0.34	257	319	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	4,995.12	3	\$15,875.00	3%	14%	\$0.21	32	48	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	Existing	1,797.89	15	\$11,000.00	15%	75%	\$0.65	61	77	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	Existing	17,300.26	18	\$8,500.00	15%	35%	\$0.05	204	247	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	Existing	48,750.03	20	\$67,071.79	100%	at stock turnover	\$0.14	111	112	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	Existing	50,554.04	15	\$8,415.00	13%	50%	\$0.02	1,171	1,321	BEST Simulation
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	25,023.76	20	\$200,000.00	10%	30%	\$0.13	48	49	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	New	5,132.88	3	\$48,000.00	10%	75%	\$0.60	32	32	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	0.00	10	\$7,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	New	4,562.46	15	\$15,875.00	20%	65%	\$0.07	20	20	BEST Simulation
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	3,637.12	18	\$100.00	15%	35%	\$0.00	7	7	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	5,007.67	50	\$125,000.00	15%	25%	\$0.82	5	5	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	56.57	45	\$63,135.00	15%	50%	\$0.84	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	2,879.64	20	\$17,500.00	15%	50%	\$0.11	10	10	BEST Simulation
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	217.45	45	\$38,550.00	15%	50%	\$0.60	1	1	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	3,736.87	3	\$15,875.00	3%	14%	\$0.25	4	4	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	New	1,368.20	15	\$6,500.00	15%	75%	\$0.48	8	8	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	New	13,565.83	18	\$8,500.00	15%	35%	\$0.06	26	26	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	New	40,368.41	20	\$66,479.53	100%	at stock turnover	\$0.17	13	13	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	New	40,197.39	15	\$8,415.00	19%	50%	\$0.02	120	120	BEST Simulation
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	3,727.23	5	\$9,000.00	3%	75%	\$0.48	123	137	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	1,075.42	7	\$1,395.00	1%	4%	\$0.19	1	2	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	Existing	23,918.87	20	\$1,115.00	1%	7%	\$0.00	67	68	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,157.11	5	\$2,000.00	1%	10%	\$0.11	18	19	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	Existing	10,755.41	5	\$660.00	25%	65%	\$0.01	77	80	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	Existing	1,388.42	15	\$560.00	15%	25%	\$0.04	7	7	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	Existing	207.44	15	\$15.00	15%	75%	\$0.01	6	6	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	2,502.39	15	\$3,125.00	16%	75%	\$0.13	69	74	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	Existing	9,188.01	20	\$12,500.00	1%	30%	\$0.13	126	132	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	Existing	912.13	13	\$59.71	68%	at stock turnover	\$0.01	30	29	BEST Simulation
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	3,890.39	5	\$9,000.00	3%	75%	\$0.48	131	142	AEG study for PN&L
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	11,772.98	20	\$200,000.00	10%	30%	\$0.13	15	15	AEG research & analysis
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	3,654.26	5	\$9,000.00	6%	75%	\$0.48	17	17	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	1,014.43	7	\$1,395.00	1%	2%	\$0.19	0	0	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	New	23,856.86	20	\$1,115.00	1%	7%	\$0.00	10	10	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	New	4,201.14	5	\$2,000.00	0%	75%	\$0.11	21	21	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	New	10,722.07	5	\$660.00	25%	65%	\$0.01	11	11	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	New	1,402.97	15	\$560.00	15%	25%	\$0.04	1	1	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	New	207.73	15	\$15.00	15%	75%	\$0.01	1	1	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	New	2,443.15	15	\$3,125.00	1%	75%	\$0.13	12	12	BEST Simulation
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	New	8,948.47	20	\$12,500.00	1%	30%	\$0.13	17	17	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	New	912.13	13	\$59.71	68%	at stock turnover	\$0.01	6	6	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	3,515.16	5	\$9,000.00	6%	75%	\$0.48	16	16	AEG study for PN&L
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Large Retail bldg.	Existing	19,950.83	23	\$26,462.09	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	Existing	63,238.85	23	\$23,821.61	12%	at stock turnover	\$0.04	121	122	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	44,225.41	10	\$810.00	15%	75%	\$0.00	82	91	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	6,152.96	15	\$2,230.00	15%	75%	\$0.04	11	13	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	Existing	1,963.00	15	\$4,230.00	15%	75%	\$0.20	3	4	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	Existing	47,125.90	12	\$45,000.00	15%	30%	\$0.11	154	192	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	8,373.15	10	\$15,000.00	15%	35%	\$0.08	37	42	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	41,397.07	15	\$3,570.00	15%	25%	\$0.00	0	2	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	15,109.24	15	\$31,750.00	20%	65%	\$0.06	154	170	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	Existing	28,783.48	15	\$66,328.70	3%	at stock turnover	\$0.28	15	14	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Large Retail bldg.	Existing	2,943.29	23	\$51.72	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	1,515.08	18	\$110.00	15%	25%	\$0.00	3	4	BEST Simulation
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	Existing	61,576.05	10	\$34,740.00	18%	75%	\$0.08	346	405	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	16,005.05	50	\$250,000.00	15%	25%	\$0.81	34	44	6th Plan
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	-1,551.76	45	\$126,270.00	15%	35%	\$0.09	-7	-8	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	7,571.82	20	\$820.00	15%	35%	\$0.08	34	38	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	13,636.78	45	\$69,280.00	15%	35%	\$0.13	59	68	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	8,912.91	20	\$35,000.00	15%	50%	\$0.09	68	78	BEST Simulation
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	-6,712.00	45	\$77,100.00	15%	35%	\$0.07	-30	-34	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	PTAC - EER 12.2	per 100,000 sqft Large Retail bldg.	Existing	47,431.32	15	\$29,876.45	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	16,272.63	3	\$61,000.00	10%	75%	\$0.29	228	265	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$152,760.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	11,759.84	3	\$31,750.00	0%	3%	\$0.18	8	11	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	30,801.20	10	\$810.00	15%	75%	\$0.00	14	16	DEER
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	40,409.64	4	\$810.00	15%	75%	\$0.01	18	21	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	4,929.68	15	\$2,230.00	15%	75%	\$0.05	2	3	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	Existing	1,950.06	15	\$10,270.00	15%	75%	\$0.46	1	1	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	62,530.56	20	\$400,000.00	10%	30%	\$0.11	49	50	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Large Retail bldg.	New	19,393.28	23	\$22,698.90	3%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	New	54,428.24	23	\$21,126.94	16%	at stock turnover	\$0.04	32	33	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	35,563.71	10	\$810.00	15%	75%	\$0.00	11	11	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	5,055.73	15	\$2,230.00	15%	75%	\$0.04	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$4,230.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	New	12,606.18	3	\$96,000.00	10%	75%	\$0.52	32	33	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	New	36,663.47	12	\$45,000.00	15%	30%	\$0.14	21	22	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	7,268.89	10	\$15,000.00	15%	50%	\$0.08	10	10	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	8,257.46	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	New	12,284.96	15	\$31,750.00	20%	65%	\$0.06	22	22	BEST Simulation
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	New	28,783.48	15	\$86,227.31	3%	at stock turnover	\$0.37	4	4	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Large Retail bldg.	New	2,862.19	23	\$44.37	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	2,915.85	18	\$100.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	New	49,540.54	10	\$34,740.00	18%	75%	\$0.10	18	18	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	12,306.36	50	\$250,000.00	15%	25%	\$1.08	5	5	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-971.47	45	\$126,270.00	15%	50%	\$0.20	-1	-1	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	10,615.40	45	\$69,280.00	15%	50%	\$0.14	14	15	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	7,195.71	20	\$35,000.00	15%	50%	\$0.10	10	10	BEST Simulation
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	-100.83	45	\$77,100.00	15%	50%	\$0.47	0	0	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$152,760.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	9,103.74	3	\$31,750.00	0%	3%	\$0.21	1	1	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Large Retail bldg.	New	92,856.06	23	\$31,965.98	4%	at stock turnover	\$0.04	14	14	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	22,900.46	10	\$810.00	15%	75%	\$0.00	2	2	DEER
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	30,360.48	4	\$810.00	15%	75%	\$0.01	2	2	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	3,715.28	15	\$2,230.00	15%	75%	\$0.05	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$10,270.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	1,229.52	15	\$31,750.00	20%	65%	\$0.06	27	44	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	3,653.92	5	\$6,390.00	15%	25%	\$0.29	17	37	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	416.14	10	\$4,380.00	33%	60%	\$1.06	5	12	AEG research & analysis
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	Existing	21,181.30	10	\$6,850.00	15%	30%	\$0.04	159	315	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	257.23	15	-\$9.03	100%	at stock turnover	-\$0.01	3	4	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	327.96	15	\$71.53	100%	at stock turnover	\$0.00	706	657	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	50.34	15	\$11.56	100%	at stock turnover	\$0.01	406	392	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	11.48	15	\$0.89	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	1,207.33	3	\$61,000.00	10%	75%	\$0.29	37	63	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	56.68	6	\$1.07	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	46.13	15	\$19.48	100%	at stock turnover	\$0.03	208	126	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	1,055.84	3	\$31,750.00	0%	3%	\$0.18	2	4	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	5,559.36	20	\$400,000.00	10%	30%	\$0.11	7	11	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	949.98	3	\$96,000.00	10%	75%	\$0.52	4	6	6th Plan
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	1,006.36	15	\$31,750.00	20%	65%	\$0.06	3	5	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	2,875.80	5	\$6,390.00	15%	25%	\$0.34	2	3	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	348.04	10	\$4,380.00	44%	60%	\$1.15	0	1	AEG research & analysis
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	New	17,362.00	10	\$6,850.00	15%	30%	\$0.04	18	26	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	257.23	15	-\$9.03	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	327.96	15	\$71.53	100%	at stock turnover	\$0.00	127	118	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	50.34	15	\$11.56	100%	at stock turnover	\$0.01	73	70	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	11.48	15	\$0.89	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	56.68	6	\$1.07	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	46.13	15	\$19.48	100%	at stock turnover	\$0.02	36	20	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	830.79	3	\$31,750.00	0%	3%	\$0.21	0	0	BEST Simulation
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	43,431.15	15	\$439.91	40%	at stock turnover	-\$0.01	109	107	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	4,426.35	10	\$533.75	45%	at stock turnover	\$0.02	44	39	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	7,504.02	18	\$1,982.95	40%	at stock turnover	\$0.03	15	14	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	7,969.51	10	\$1,299.68	49%	at stock turnover	\$0.02	58	51	Developed from RTF "ComCookingConvectionOven" v2.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	43,431.15	15	\$659.87	59%	at stock turnover	-\$0.01	32	32	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	4,426.35	10	\$800.62	68%	at stock turnover	\$0.03	11	10	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	7,504.02	18	\$2,974.42	59%	at stock turnover	\$0.04	4	4	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	7,969.51	10	\$1,949.53	73%	at stock turnover	\$0.04	14	13	Developed from RTF "ComCookingConvectionOven" v2.0
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Large Retail bldg.	Existing	4,147.37	23	\$116,781.17	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	18,499.29	10	\$15,000.00	15%	35%	\$0.08	45	46	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	249,958.31	15	\$3,570.00	15%	25%	\$0.00	264	264	Developed from RTF
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	31,585.91	15	\$31,750.00	20%	65%	\$0.06	177	179	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	2,539.85	18	\$110.00	15%	25%	\$0.00	3	3	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	123,002.35	45	\$126,270.00	15%	35%	\$0.09	299	309	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	-6,636.40	20	\$820.00	15%	35%	\$0.09	-17	-17	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	30,028.11	45	\$69,280.00	15%	35%	\$0.13	71	75	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	23,562.82	20	\$35,000.00	15%	50%	\$0.09	99	104	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	98,935.48	45	\$77,100.00	15%	35%	\$0.07	244	249	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	35,838.69	3	\$61,000.00	10%	75%	\$0.30	276	293	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	Existing	0.00	14	\$183,550.00	3%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	25,890.65	3	\$31,750.00	0%	3%	\$0.18	9	10	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	164,395.94	20	\$400,000.00	10%	30%	\$0.11	52	52	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Large Retail bldg.	New	4,389.39	23	\$116,312.44	3%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	New	32,791.77	3	\$96,000.00	10%	75%	\$0.52	34	34	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	17,878.95	10	\$15,000.00	15%	50%	\$0.08	10	10	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	249,793.48	15	\$3,570.00	15%	25%	\$0.00	33	33	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	New	30,217.62	15	\$31,750.00	20%	65%	\$0.06	22	22	BEST Simulation
Large Retail	Heating	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Large Retail bldg.	New	1,101.32	23	\$220.95	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	6,593.43	18	\$100.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	51,455.56	45	\$126,270.00	15%	50%	\$0.20	29	29	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	28,343.97	45	\$69,280.00	15%	50%	\$0.14	16	16	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	23,092.22	20	\$35,000.00	15%	50%	\$0.10	13	13	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	12,811.10	45	\$77,100.00	15%	50%	\$0.47	7	7	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	New	0.00	14	\$183,550.00	6%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	23,802.82	3	\$31,750.00	0%	3%	\$0.21	1	1	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	8,165.78	15	\$31,750.00	20%	65%	\$0.06	166	294	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	586.34	15	-\$24.22	100%	at stock turnover	-\$0.02	7	11	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	747.58	15	\$191.83	100%	at stock turnover	\$0.00	2,018	1,876	EIA 2011
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	41,708.90	5	\$95,330.00	5%	15%	\$0.36	61	145	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	Existing	66,144.57	5	\$4,570.00	15%	50%	\$0.01	376	765	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	48,594.74	12	\$40,000.00	3%	25%	\$0.07	473	1,098	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	Existing	7,353.93	16	\$2,880.00	1%	3%	\$0.03	7	18	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	52,556.84	10	\$11,930.00	7%	45%	\$0.02	651	1,414	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	Existing	0.00	25	\$41,000.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$13,310.00	7%	15%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	Existing	6,702.49	5	\$11,000.00	10%	25%	\$0.21	10	40	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	154.29	15	\$31.09	100%	at stock turnover	\$0.01	5,260	5,140	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	36.10	15	\$3.31	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	7,781.38	3	\$61,000.00	10%	75%	\$0.29	222	405	6th Plan
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	168.39	6	\$3.74	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	137.05	15	\$68.08	100%	at stock turnover	\$0.03	1,416	862	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	6,745.48	3	\$31,750.00	0%	3%	\$0.18	9	27	BEST Simulation
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	34,930.04	20	\$400,000.00	10%	30%	\$0.11	45	70	AEG research & analysis
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	5,984.08	3	\$96,000.00	10%	75%	\$0.52	25	39	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	6,565.85	15	\$31,750.00	20%	65%	\$0.06	19	30	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	586.34	15	-\$24.22	100%	at stock turnover	-\$0.02	1	2	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	747.58	15	\$191.83	100%	at stock turnover	\$0.00	362	338	EIA 2011
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	33,677.47	5	\$95,330.00	5%	15%	\$0.43	7	11	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	New	53,323.21	5	\$4,570.00	15%	50%	\$0.02	41	63	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	38,861.79	12	\$40,000.00	4%	25%	\$0.09	52	80	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	New	5,912.46	16	\$2,880.00	1%	3%	\$0.04	1	1	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	41,092.73	10	\$11,930.00	22%	45%	\$0.03	28	44	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	New	0.00	25	\$41,000.00	18%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$13,310.00	7%	15%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	New	4,034.14	5	\$11,000.00	10%	25%	\$0.34	1	2	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	154.29	15	\$31.09	100%	at stock turnover	\$0.01	941	924	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	36.10	15	\$3.31	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	168.39	6	\$3.74	100%	at stock turnover	\$0.00	0	0	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	137.05	15	\$68.08	100%	at stock turnover	\$0.03	248	134	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	5,220.44	3	\$31,750.00	0%	3%	\$0.21	1	2	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	380.55	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	Existing	5.57	7	\$30.00	1%	3%	\$1.03	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	Existing	272.42	10	\$190.00	1%	3%	\$0.10	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	Existing	5,320.52	15	\$8,370.00	15%	75%	\$0.19	34	34	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	1,412.00	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Large Retail bldg.	Existing	253.35	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,756.19	3	\$31,750.00	0%	3%	\$0.18	6	6	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	452.84	7	\$1,400.00	1%	2%	\$0.17	0	0	Developed from RTF
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Large Retail bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	New	5,338.39	15	\$8,370.00	15%	75%	\$0.19	5	5	AEG research & analysis
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	New	1,412.00	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis

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Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	4,570.54	3	\$31,750.00	0%	3%	\$0.21	1	1	BEST Simulation
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	12,445.28	6	\$93.38	100%	at stock turnover	\$0.00	113	120	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	Existing	1,028.05	4	\$2,650.00	10%	50%	\$0.71	69	79	Developed from RTF
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,450.20	6	\$60.73	100%	at stock turnover	\$0.01	22	24	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,164.70	6	\$146.36	100%	at stock turnover	\$0.01	8	8	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	3,076.90	5	\$4,000.00	10%	25%	\$0.31	79	89	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	379.70	6	\$2.85	100%	at stock turnover	\$0.00	6	7	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	3,378.73	6	\$43.20	100%	at stock turnover	\$0.00	7	7	ENERGY STAR Calculator
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,270.49	5	\$13.97	82%	at stock turnover	\$0.00	48	52	Assumed same as Desktop
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	12,445.28	6	\$93.38	100%	at stock turnover	\$0.00	19	19	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	New	1,157.29	4	\$2,650.00	10%	50%	\$0.61	10	11	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,450.20	6	\$60.73	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,164.70	6	\$146.36	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	3,520.17	5	\$4,000.00	10%	25%	\$0.26	11	12	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	379.70	6	\$2.85	100%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	3,378.73	6	\$43.20	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,270.49	5	\$16.76	98%	at stock turnover	\$0.00	8	8	Assumed same as Desktop
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	Existing	5,904.38	9	\$347.96	52%	at stock turnover	\$0.01	21	19	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	Existing	2,498.14	8	\$2,540.00	0%	25%	\$0.17	14	14	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	Existing	3.81	9	\$100.00	0%	25%	\$4.08	0	0	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	Existing	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	Existing	1,738.55	15	\$28,120.00	0%	25%	\$1.81	31	34	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	Existing	3,590.82	15	\$5,220.00	0%	25%	\$0.17	65	70	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	Existing	3,572.75	4	\$10.00	0%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	Existing	13,619.52	10	\$2,068.48	52%	at stock turnover	\$0.03	140	123	EIA 2011
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	New	5,904.38	9	\$521.93	79%	at stock turnover	\$0.01	5	5	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	New	3,029.89	8	\$2,540.00	0%	25%	\$0.15	3	3	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	New	3.82	9	\$100.00	0%	25%	\$4.08	0	0	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	New	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	New	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	New	1,688.45	15	\$28,120.00	0%	25%	\$1.87	5	5	Developed from RTF
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	New	3,469.71	15	\$5,220.00	0%	25%	\$0.17	11	11	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	New	3,570.74	4	\$10.00	0%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	New	13,619.52	10	\$3,102.72	79%	at stock turnover	\$0.05	36	33	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	5,155.39	15	\$31,750.00	20%	65%	\$0.06	46	62	BEST Simulation
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	2,821.88	18	\$110.00	15%	25%	\$0.00	6	8	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	5,929.55	50	\$250,000.00	15%	25%	\$0.81	11	19	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	-202.91	45	\$126,270.00	15%	35%	\$0.09	-1	-1	BEST Simulation
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	33.21	20	\$820.00	15%	35%	\$0.08	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	3,268.52	20	\$35,000.00	15%	50%	\$0.09	23	31	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	600.51	45	\$77,100.00	15%	35%	\$0.07	2	3	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	6,023.29	3	\$61,000.00	10%	75%	\$0.29	76	105	6th Plan
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,351.29	3	\$31,750.00	0%	3%	\$0.18	3	5	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	Existing	1,565.58	15	\$22,000.00	15%	75%	\$1.43	18	25	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	Existing	14,845.56	18	\$17,000.00	15%	35%	\$0.11	58	79	DEER
Large Retail	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Large Retail bldg.	Existing	73,518.40	20	\$61,350.88	100%	at stock turnover	\$0.09	306	310	BEST Simulation
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	Existing	43,897.98	15	\$7,010.00	13%	50%	\$0.02	345	430	BEST Simulation
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	17,125.09	20	\$400,000.00	10%	30%	\$0.11	11	11	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	New	3,479.90	3	\$96,000.00	10%	75%	\$0.52	7	7	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	New	3,122.20	15	\$31,750.00	20%	65%	\$0.06	4	5	BEST Simulation
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	1,651.92	18	\$100.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	3,397.14	50	\$250,000.00	15%	25%	\$1.08	1	1	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-300.13	45	\$126,270.00	15%	50%	\$0.20	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	1,970.66	20	\$35,000.00	15%	50%	\$0.10	2	2	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	151.11	45	\$77,100.00	15%	50%	\$0.47	0	0	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	2,514.72	3	\$31,750.00	0%	3%	\$0.21	0	0	BEST Simulation
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	New	896.95	15	\$13,000.00	15%	75%	\$1.35	2	2	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	New	8,623.56	18	\$17,000.00	15%	35%	\$0.18	5	6	DEER
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	New	27,007.89	15	\$7,010.00	19%	50%	\$0.03	26	27	BEST Simulation
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	8,677.97	5	\$18,000.00	3%	75%	\$0.42	100	111	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	935.67	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	Existing	54,821.82	20	\$1,120.00	0%	2%	\$0.00	15	15	Developed from RTF (Residential)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	9,466.92	5	\$4,000.00	1%	10%	\$0.09	14	15	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	Existing	24,994.53	5	\$1,320.00	25%	65%	\$0.01	62	64	DEER
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$710.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	Existing	360.21	15	\$30.00	15%	75%	\$0.01	4	4	DEER
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	6,088.34	15	\$4,420.00	16%	75%	\$0.08	60	61	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	Existing	20,926.53	20	\$25,000.00	1%	30%	\$0.11	99	104	BEST Simulation
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	Existing	2,090.18	13	\$102.30	63%	at stock turnover	\$0.01	24	23	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	9,058.91	5	\$18,000.00	3%	75%	\$0.42	106	114	AEG study for PN&L
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	27,391.95	20	\$400,000.00	10%	30%	\$0.11	11	11	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	8,178.68	5	\$18,000.00	6%	75%	\$0.42	12	12	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	882.14	7	\$1,400.00	1%	2%	\$0.17	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	New	54,680.02	20	\$1,120.00	0%	2%	\$0.00	2	2	Developed from RTF (Residential)
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	New	9,524.08	5	\$4,000.00	0%	75%	\$0.09	15	15	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	New	24,904.13	5	\$1,320.00	25%	65%	\$0.01	8	8	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$710.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	New	360.54	15	\$30.00	15%	75%	\$0.01	0	0	DEER
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	6,149.08	15	\$4,420.00	1%	75%	\$0.08	9	9	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	New	20,289.51	20	\$25,000.00	1%	30%	\$0.11	12	12	BEST Simulation
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	New	2,090.18	13	\$102.30	63%	at stock turnover	\$0.01	4	4	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	8,502.65	5	\$18,000.00	6%	75%	\$0.42	12	12	AEG study for PN&L
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	6,868.60	23	\$9,995.32	20%	at stock turnover	\$0.09	20	18	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	Existing	10,006.74	23	\$5,008.85	5%	at stock turnover	\$0.05	4	4	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	5,323.14	10	\$814.00	15%	75%	\$0.02	4	4	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	2,316.34	15	\$1,573.00	15%	75%	\$0.07	2	2	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	Existing	106.58	15	\$704.00	15%	75%	\$0.60	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	Destratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	Existing	18,155.96	12	\$24,750.00	15%	30%	\$0.16	52	62	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	3,227.62	10	\$8,250.00	15%	35%	\$0.11	12	14	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	33,508.84	15	\$3,569.50	15%	75%	\$0.00	69	80	Developed from RTF
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	Existing	11,797.02	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	7,554.75	23	\$10,257.89	3%	at stock turnover	\$10.00	1	1	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	Existing	13,985.00	10	\$5,786.00	18%	75%	\$0.05	29	33	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	6,192.62	50	\$137,500.00	15%	25%	\$1.00	12	14	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	-3,835.00	45	\$69,448.50	15%	35%	\$0.31	-15	-16	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	5,253.39	45	\$38,104.00	15%	35%	\$0.19	20	22	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	3,433.98	20	\$19,250.00	15%	50%	\$0.13	23	25	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	-2,408.44	45	\$42,405.00	15%	35%	\$0.11	-9	-10	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	12,224.69	15	\$258.50	15%	75%	\$0.01	145	163	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	Existing	19,439.91	15	\$12,244.97	31%	at stock turnover	\$0.07	129	119	BEST Simulation
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	6,296.82	3	\$33,550.00	10%	75%	\$0.42	78	87	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	Existing	5,381.37	23	\$10,255.42	9%	at stock turnover	\$0.20	2	2	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$25,448.50	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	Existing	18,707.90	23	\$7,578.61	20%	at stock turnover	\$0.04	54	53	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	5,172.86	10	\$814.00	15%	75%	\$0.02	13	16	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	6,788.48	4	\$814.00	15%	75%	\$0.03	17	21	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	3,767.77	15	\$1,573.00	15%	75%	\$0.04	9	12	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	Existing	122.84	15	\$7,238.00	15%	75%	\$4.87	0	0	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	27,037.58	20	\$220,000.00	10%	25%	\$0.11	15	15	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	5,637.64	23	\$9,060.26	23%	at stock turnover	\$0.08	5	5	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	New	9,023.06	23	\$4,754.17	6%	at stock turnover	\$0.05	1	1	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	4,203.59	10	\$814.00	15%	75%	\$0.03	1	1	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	2,147.20	15	\$1,573.00	15%	75%	\$0.07	0	0	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$704.00	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	New	5,425.39	3	\$52,800.00	10%	75%	\$0.73	13	13	6th Plan
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	New	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	Destratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	New	15,782.09	12	\$24,750.00	15%	30%	\$0.17	9	9	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	2,822.38	10	\$8,250.00	15%	50%	\$0.12	4	4	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	27,194.70	15	\$3,569.50	15%	75%	\$0.00	11	11	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	New	11,797.02	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	6,203.75	23	\$9,298.28	3%	at stock turnover	\$10.00	1	1	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	New	12,664.03	10	\$5,786.00	18%	75%	\$0.06	2	2	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	5,296.36	50	\$137,500.00	15%	25%	\$1.19	2	2	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	-678.84	45	\$69,448.50	15%	50%	\$1.96	-1	-1	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	4,569.49	45	\$38,104.00	15%	50%	\$0.20	6	6	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	2,991.22	20	\$19,250.00	15%	50%	\$0.14	4	4	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	-43.40	45	\$42,405.00	15%	50%	\$0.71	0	0	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	11,387.82	15	\$258.50	15%	75%	\$0.01	25	26	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	New	17,012.39	15	\$11,615.53	37%	at stock turnover	\$0.08	29	27	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	New	4,415.12	23	\$9,296.03	11%	at stock turnover	\$0.22	0	0	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	New	0.00	15	\$25,448.50	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	New	17,027.85	23	\$7,193.26	24%	at stock turnover	\$0.04	17	17	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	4,021.58	10	\$814.00	15%	75%	\$0.02	2	2	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	New	5,332.16	4	\$814.00	15%	75%	\$0.03	3	3	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	3,253.54	15	\$1,573.00	15%	75%	\$0.04	2	2	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$7,238.00	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	1,697.95	5	\$357.50	15%	25%	\$0.04	8	15	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	354.95	10	\$1,886.50	33%	60%	\$0.54	4	9	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	Existing	9,756.99	10	\$2,948.00	15%	30%	\$0.03	68	130	AEG research & analysis
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	724.07	15	-\$37.28	100%	at stock turnover	-\$0.02	2	3	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	923.17	15	\$295.32	100%	at stock turnover	\$0.00	424	397	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	185.54	15	\$34.15	100%	at stock turnover	\$0.01	31	31	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	44.58	15	\$5.09	100%	at stock turnover	\$0.00	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	560.98	3	\$33,550.00	10%	75%	\$0.42	16	27	6th Plan
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	185.69	6	\$5.14	100%	at stock turnover	\$0.00	0	0	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	151.13	15	\$93.59	100%	at stock turnover	\$0.04	115	70	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	2,662.83	20	\$220,000.00	10%	25%	\$0.11	3	4	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	461.65	3	\$52,800.00	10%	75%	\$0.73	2	3	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	1,439.50	5	\$357.50	15%	25%	\$0.04	1	2	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	382.54	10	\$1,886.50	44%	60%	\$0.47	0	1	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	New	8,277.93	10	\$2,948.00	15%	30%	\$0.04	9	14	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	724.07	15	-\$37.28	100%	at stock turnover	-\$0.02	0	1	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	923.17	15	\$295.32	100%	at stock turnover	\$0.00	95	90	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	185.54	15	\$34.15	100%	at stock turnover	\$0.00	7	7	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	44.58	15	\$5.09	100%	at stock turnover	\$0.00	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	185.69	6	\$5.14	100%	at stock turnover	\$0.00	0	0	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	151.13	15	\$93.59	100%	at stock turnover	\$0.04	25	14	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	42,885.16	15	\$329.60	30%	at stock turnover	\$0.00	74	73	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	4,370.71	10	\$244.86	21%	at stock turnover	\$0.01	18	16	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	7,409.68	18	\$1,485.71	30%	at stock turnover	\$0.02	10	10	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	7,869.32	10	\$362.17	14%	at stock turnover	\$0.01	15	13	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	42,885.16	15	\$428.48	39%	at stock turnover	-\$0.01	23	23	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	4,370.71	10	\$318.32	27%	at stock turnover	\$0.01	5	4	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	7,409.68	18	\$1,931.42	39%	at stock turnover	\$0.03	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	7,869.32	10	\$470.82	18%	at stock turnover	\$0.01	4	3	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	4,669.73	23	\$9,625.61	20%	at stock turnover	\$0.09	13	13	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	6,368.18	10	\$8,250.00	15%	35%	\$0.11	21	22	AEG research & analysis
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	91,047.48	15	\$3,569.50	15%	75%	\$0.00	308	308	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	-86,149.81	23	\$7,806.48	3%	at stock turnover	\$10.00	-7	0	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	21,435.01	45	\$69,448.50	15%	35%	\$0.31	70	73	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	10,522.52	45	\$38,104.00	15%	35%	\$0.19	34	36	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	8,256.88	20	\$19,250.00	15%	50%	\$0.13	48	49	BEST Simulation
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	34,054.26	45	\$42,405.00	15%	35%	\$0.11	114	116	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	-13,793.84	15	\$258.50	15%	75%	\$0.01	-138	-146	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	12,459.70	3	\$33,550.00	10%	75%	\$0.42	131	138	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	Existing	0.00	14	\$226,215.00	3%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	57,769.27	20	\$220,000.00	10%	25%	\$0.11	23	23	AEG research & analysis
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	6,035.61	23	\$8,996.47	23%	at stock turnover	\$0.08	6	6	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	New	11,694.88	3	\$52,800.00	10%	75%	\$0.73	20	20	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	6,029.70	10	\$8,250.00	15%	50%	\$0.12	6	6	AEG research & analysis
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	91,047.48	15	\$3,569.50	15%	75%	\$0.00	46	46	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	-73,876.54	23	\$7,076.21	3%	at stock turnover	\$10.00	-7	0	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	3,358.48	45	\$69,448.50	15%	50%	\$1.96	3	3	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	9,901.06	45	\$38,104.00	15%	50%	\$0.20	9	9	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	7,788.08	20	\$19,250.00	15%	50%	\$0.14	7	7	BEST Simulation
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	4,568.95	45	\$42,405.00	15%	50%	\$0.71	4	4	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	-12,663.59	15	\$258.50	15%	75%	\$0.01	-20	-20	BEST Simulation
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	New	0.00	14	\$226,215.00	6%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	611.99	15	-\$31.51	100%	at stock turnover	-\$0.02	1	1	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	780.28	15	\$249.61	100%	at stock turnover	\$0.00	175	164	EIA 2011
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	5,467.46	5	\$8,734.00	5%	15%	\$0.26	8	17	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	Existing	7,913.90	5	\$1,430.00	15%	50%	\$0.03	42	82	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	13,470.80	12	\$22,000.00	3%	25%	\$0.13	109	289	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	Existing	2,056.93	16	\$902.00	1%	3%	\$0.03	2	5	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	14,659.49	10	\$3,734.50	7%	45%	\$0.02	151	374	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	Existing	0.00	25	\$26,647.50	15%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$4,048.00	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	Existing	8,677.59	5	\$6,050.00	10%	25%	\$0.09	14	45	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	181.62	15	\$33.42	100%	at stock turnover	\$0.01	645	636	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	43.64	15	\$4.99	100%	at stock turnover	\$0.00	0	0	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	4,700.20	15	\$258.50	15%	75%	\$0.01	32	95	BEST Simulation
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	2,159.75	3	\$33,550.00	10%	75%	\$0.42	51	102	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	183.08	6	\$5.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	149.01	15	\$97.13	100%	at stock turnover	\$0.04	1,854	1,130	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	9,972.10	20	\$220,000.00	10%	25%	\$0.11	10	17	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	1,659.34	3	\$52,800.00	10%	75%	\$0.73	7	12	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	611.99	15	-\$31.51	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	780.28	15	\$249.61	100%	at stock turnover	\$0.00	39	37	EIA 2011
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	4,848.43	5	\$8,734.00	5%	15%	\$0.29	1	2	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	New	7,196.44	5	\$1,430.00	15%	50%	\$0.04	6	9	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	10,363.59	12	\$22,000.00	4%	25%	\$0.17	14	23	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	New	1,603.52	16	\$902.00	1%	3%	\$0.04	0	0	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	11,299.36	10	\$3,734.50	22%	45%	\$0.03	8	13	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	New	0.00	25	\$26,647.50	18%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	New	0.00	8	\$4,048.00	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	New	6,091.75	5	\$6,050.00	10%	25%	\$0.13	2	3	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	181.62	15	\$33.42	100%	at stock turnover	\$0.00	141	139	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	43.64	15	\$4.99	100%	at stock turnover	\$0.00	0	0	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	3,313.91	15	\$258.50	15%	75%	\$0.01	4	7	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	183.08	6	\$5.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	149.01	15	\$97.13	100%	at stock turnover	\$0.04	403	217	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	109.74	7	\$1,397.00	1%	8%	\$0.27	0	0	Developed from RTF
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	Existing	1.61	7	\$33.00	1%	3%	\$3.94	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuId=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	Existing	78.47	10	\$192.50	1%	3%	\$0.37	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	Existing	0.00	13	\$0.00	91%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	Existing	1,618.34	15	\$8,321.50	15%	75%	\$0.62	22	21	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	Existing	1,147.88	10	\$198.33	27%	at stock turnover	\$0.03	6	5	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	Existing	411.92	10	\$425.21	76%	at stock turnover	\$0.15	6	5	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	Existing	16.10	5	\$60.50	15%	75%	\$0.78	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	120.08	7	\$1,397.00	1%	4%	\$0.26	0	0	Developed from RTF
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuid=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	New	1,621.98	15	\$8,321.50	15%	75%	\$0.61	4	4	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	New	1,147.88	10	\$237.99	32%	at stock turnover	\$0.03	1	1	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	New	411.92	10	\$510.25	91%	at stock turnover	\$0.19	1	1	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	New	15.50	5	\$60.50	15%	75%	\$0.79	0	0	AEG research & analysis
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$550,000.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	1,996.28	6	\$14.98	100%	at stock turnover	\$0.00	16	17	ENERGY STAR Calculator
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	Existing	105.48	4	\$1,457.50	10%	50%	\$3.79	6	7	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	393.02	6	\$9.74	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	347.23	6	\$23.48	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	311.74	5	\$2,200.00	10%	25%	\$1.64	7	8	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	406.03	6	\$1.77	58%	at stock turnover	\$0.00	4	4	Assumed same as Desktop
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	433.57	6	\$5.54	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	1,456.79	5	\$10.93	100%	at stock turnover	\$0.00	32	34	Assumed same as Desktop
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	New	0.00	20	\$165,000.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	New	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	1,996.28	6	\$14.98	100%	at stock turnover	\$0.00	3	3	ENERGY STAR Calculator
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	New	109.62	4	\$1,457.50	10%	50%	\$3.60	1	1	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	393.02	6	\$9.74	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	347.23	6	\$23.48	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	325.72	5	\$2,200.00	10%	25%	\$1.55	1	1	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	406.03	6	\$1.94	64%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	433.57	6	\$5.54	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	1,456.79	5	\$10.93	100%	at stock turnover	\$0.00	6	6	Assumed same as Desktop
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,629.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	Existing	1,904.04	9	\$126.13	59%	at stock turnover	\$0.01	7	6	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	Existing	2.53	9	\$104.50	0%	10%	\$6.62	0	0	PacifiCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$22,935.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$5,219.50	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$16,890.50	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	Existing	8,784.01	10	\$1,499.57	59%	at stock turnover	\$0.04	90	79	EIA 2011
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	New	0.00	5	\$1,545.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	New	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	New	1,904.04	9	\$163.97	77%	at stock turnover	\$0.01	2	2	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	New	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	New	2.53	9	\$104.50	0%	10%	\$6.62	0	0	PacifiCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	New	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	New	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	New	0.00	15	\$22,935.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	New	0.00	15	\$5,219.50	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	New	0.00	4	\$16,890.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	New	8,784.01	10	\$1,949.44	77%	at stock turnover	\$0.05	28	26	EIA 2011
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	0.00	10	\$8,250.00	15%	35%	\$0.00	0	0	AEG research & analysis
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	3,734.90	50	\$137,500.00	15%	25%	\$1.00	7	10	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	418.76	45	\$69,448.50	15%	35%	\$0.31	2	2	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	2,035.43	20	\$19,250.00	15%	50%	\$0.13	14	17	BEST Simulation
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	374.03	45	\$42,405.00	15%	35%	\$0.11	1	2	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	3,796.52	3	\$33,550.00	10%	75%	\$0.42	49	60	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	Existing	986.02	15	\$12,100.00	15%	75%	\$1.30	12	14	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	Existing	9,406.25	18	\$9,350.00	15%	35%	\$0.10	38	46	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	Existing	24,151.16	20	\$11,672.77	100%	at stock turnover	\$0.05	63	63	BEST Simulation
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	Existing	27,497.45	15	\$951.50	13%	50%	\$0.00	219	244	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	13,999.61	20	\$220,000.00	10%	25%	\$0.11	8	8	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	New	2,848.79	3	\$52,800.00	10%	75%	\$0.73	7	7	6th Plan
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	0.00	10	\$8,250.00	15%	50%	\$0.00	0	0	AEG research & analysis
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$16.50	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	2,764.47	50	\$137,500.00	15%	25%	\$1.19	1	1	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	64.78	45	\$69,448.50	15%	50%	\$1.96	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	1,530.72	20	\$19,250.00	15%	50%	\$0.14	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	123.70	45	\$42,405.00	15%	50%	\$0.71	0	0	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	New	736.89	15	\$7,150.00	15%	75%	\$0.99	2	2	6th Plan
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	New	7,111.34	18	\$9,350.00	15%	35%	\$0.13	5	5	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	New	20,069.15	20	\$10,583.78	100%	at stock turnover	\$0.05	3	3	BEST Simulation
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	New	21,423.46	15	\$951.50	19%	50%	\$0.01	24	24	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	21,116.50	5	\$9,900.00	3%	75%	\$0.10	178	191	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	708.54	7	\$1,397.00	1%	8%	\$0.27	1	1	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	Existing	128,252.04	20	\$1,116.50	0%	3%	\$0.00	39	39	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	24,158.28	5	\$2,200.00	1%	10%	\$0.02	27	27	AEG study for LA Dept of Water & Power

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	Existing	56,656.57	5	\$7,062.00	25%	65%	\$0.03	101	106	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	Existing	8,070.60	15	\$445.50	15%	25%	\$0.01	10	10	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	Existing	163.25	15	\$16.50	15%	75%	\$0.01	1	1	DEER
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	15,111.36	15	\$3,278.00	16%	75%	\$0.03	107	109	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	Existing	48,763.92	20	\$37,499.00	1%	30%	\$0.07	167	175	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	Existing	4,888.35	13	\$451.77	50%	at stock turnover	\$0.01	40	38	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	20,229.06	5	\$9,900.00	3%	75%	\$0.10	168	186	AEG study for PN&L
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	59,089.13	20	\$220,000.00	10%	25%	\$0.11	16	16	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	20,528.67	5	\$9,900.00	6%	75%	\$0.10	26	26	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	679.58	7	\$1,397.00	1%	4%	\$0.26	0	0	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	New	127,919.10	20	\$1,116.50	0%	3%	\$0.00	7	7	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	New	24,081.92	5	\$2,200.00	0%	75%	\$0.02	33	33	AEG study for LA Dept of Water & Power
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	New	54,213.44	5	\$7,062.00	25%	65%	\$0.03	15	15	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	New	8,044.01	15	\$445.50	15%	25%	\$0.01	1	1	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	New	163.48	15	\$16.50	15%	75%	\$0.01	0	0	DEER
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	New	14,516.01	15	\$3,278.00	1%	75%	\$0.03	19	20	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	New	47,300.29	20	\$37,499.00	1%	30%	\$0.07	25	25	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	New	4,888.35	13	\$451.77	50%	at stock turnover	\$0.01	9	9	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	19,744.91	5	\$9,900.00	6%	75%	\$0.10	25	25	AEG study for PN&L
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	88,898.38	23	\$130,737.86	8%	at stock turnover	\$0.10	433	415	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	Existing	47,678.32	23	\$17,960.07	5%	at stock turnover	\$0.04	120	121	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	32,856.29	10	\$5,430.00	15%	75%	\$0.02	100	111	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	4,057.28	15	\$14,890.00	15%	75%	\$0.35	11	15	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,121.50	15	\$6,270.00	15%	75%	\$0.53	3	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	32,478.49	15	\$78,000.00	45%	50%	\$117.41	30	42	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	6,776.29	10	\$15,000.00	15%	35%	\$0.09	106	120	AEG research & analysis
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	61,640.68	15	\$23,810.00	15%	25%	\$0.01	25	29	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	11,425.02	15	\$31,750.00	20%	65%	\$0.07	408	454	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	Existing	21,701.02	15	\$37,254.27	2%	at stock turnover	\$0.21	32	31	PacifiCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	78,354.82	23	\$107,584.67	1%	at stock turnover	\$0.10	46	46	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	18	\$170.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	Existing	44,767.86	10	\$51,500.00	18%	75%	\$0.15	770	940	DEER
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	12,316.11	50	\$250,000.00	15%	25%	\$1.06	92	120	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	9,970.70	45	\$126,270.00	15%	35%	\$0.08	157	176	BEST Simulation
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	11,211.00	45	\$69,280.00	15%	35%	\$0.14	175	198	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	7,209.51	20	\$35,000.00	15%	50%	\$0.10	198	223	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	-5,075.52	45	\$77,100.00	15%	35%	\$0.07	-80	-90	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	Existing	35,760.39	15	\$22,525.06	4%	at stock turnover	\$0.07	143	132	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	12,546.88	3	\$61,000.00	10%	75%	\$0.35	619	721	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	Existing	69,528.75	23	\$134,028.12	44%	at stock turnover	\$0.20	433	437	BEST Simulation
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$226,470.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	9,089.25	3	\$31,750.00	5%	16%	\$0.23	76	105	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	Existing	80,427.73	23	\$27,174.37	21%	at stock turnover	\$0.04	1,038	1,034	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	23,229.66	10	\$5,430.00	15%	75%	\$0.03	270	322	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	30,476.09	4	\$5,430.00	15%	75%	\$0.05	349	427	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	3,306.57	15	\$14,890.00	15%	75%	\$0.40	35	49	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,144.96	15	\$68,450.00	15%	75%	\$5.24	12	17	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	49,941.36	20	\$400,000.00	10%	15%	\$0.13	55	57	AEG research & analysis
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	87,205.56	23	\$112,896.27	11%	at stock turnover	\$0.09	214	204	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	New	41,035.65	23	\$15,928.45	7%	at stock turnover	\$0.04	51	52	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	25,950.96	10	\$5,430.00	15%	75%	\$0.03	21	22	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	3,280.81	15	\$14,890.00	15%	75%	\$0.41	3	3	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	New	926.48	15	\$6,270.00	15%	75%	\$0.61	1	1	BEST Simulation
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	9,896.45	3	\$96,000.00	10%	75%	\$0.66	141	147	6th Plan
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	5,422.76	10	\$15,000.00	15%	50%	\$0.10	42	44	AEG research & analysis
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	49,527.54	15	\$23,810.00	15%	25%	\$0.01	6	6	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	9,164.46	15	\$31,750.00	20%	65%	\$0.08	91	95	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	New	21,701.02	15	\$50,599.62	3%	at stock turnover	\$0.29	13	13	PacificCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	77,101.28	23	\$92,902.75	2%	at stock turnover	\$0.10	23	23	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	1,007.34	18	\$150.00	15%	50%	\$0.00	8	8	BEST Simulation
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	New	34,745.30	10	\$51,500.00	18%	75%	\$0.19	63	65	DEER
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	9,661.14	50	\$250,000.00	15%	25%	\$1.37	21	22	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	-859.98	45	\$126,270.00	15%	50%	\$0.27	-7	-7	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	7,576.59	20	\$820.00	15%	50%	\$0.01	59	61	BEST Simulation
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	8,841.61	45	\$69,280.00	15%	50%	\$0.16	68	71	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	5,747.03	20	\$35,000.00	15%	50%	\$0.12	44	46	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	-79.17	45	\$77,100.00	15%	50%	\$0.54	-1	-1	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	New	31,294.89	15	\$21,367.17	6%	at stock turnover	\$0.08	47	44	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	New	68,348.83	23	\$115,737.51	59%	at stock turnover	\$0.18	217	219	BEST Simulation
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$226,470.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	New	70,007.93	23	\$24,100.44	29%	at stock turnover	\$0.04	458	457	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	17,088.05	10	\$5,430.00	15%	75%	\$0.04	54	58	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	22,655.16	4	\$5,430.00	15%	75%	\$0.05	71	77	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	2,467.85	15	\$14,890.00	15%	75%	\$0.48	8	8	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	New	879.70	15	\$68,450.00	15%	75%	\$5.95	3	3	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	1,499.34	15	\$31,750.00	20%	65%	\$0.07	122	209	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	4,537.29	5	\$920.00	15%	25%	\$0.03	82	180	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	168.52	10	\$1,420.00	33%	60%	\$0.83	8	19	AEG research & analysis
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	Existing	26,032.59	10	\$2,220.00	15%	30%	\$0.01	735	1,515	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	847.46	15	-\$52.36	100%	at stock turnover	-\$0.03	16	25	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,080.50	15	\$414.77	100%	at stock turnover	\$0.00	4,383	4,090	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	143.52	15	\$31.70	100%	at stock turnover	\$0.00	348	343	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	34.48	15	\$4.73	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	1,481.47	3	\$61,000.00	10%	75%	\$0.35	172	298	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	170.59	6	\$5.67	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	138.85	15	\$103.17	100%	at stock turnover	\$0.05	1,406	859	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	1,287.73	3	\$31,750.00	5%	16%	\$0.23	25	70	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	6,573.30	20	\$400,000.00	10%	15%	\$0.13	13	20	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	1,163.95	3	\$96,000.00	10%	75%	\$0.66	30	45	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	1,189.88	15	\$31,750.00	20%	65%	\$0.08	22	32	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	3,602.12	5	\$920.00	15%	25%	\$0.04	15	22	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	140.32	10	\$1,420.00	44%	60%	\$0.94	1	1	AEG research & analysis
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	New	20,713.91	10	\$2,220.00	15%	30%	\$0.01	126	188	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	847.46	15	-\$52.36	100%	at stock turnover	-\$0.03	5	8	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,080.50	15	\$414.77	100%	at stock turnover	\$0.00	1,224	1,150	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	143.52	15	\$31.70	100%	at stock turnover	\$0.00	97	96	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	34.48	15	\$4.73	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	170.59	6	\$5.67	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	138.85	15	\$103.17	100%	at stock turnover	\$0.04	404	218	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	20,620.06	15	\$81.33	15%	at stock turnover	\$0.00	78	76	Illinois TRM
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	2,101.53	10	\$167.63	30%	at stock turnover	\$0.01	54	47	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	3,562.73	18	\$366.63	15%	at stock turnover	\$0.01	10	10	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	3,783.73	10	\$743.25	59%	at stock turnover	\$0.03	128	112	Developed from RTF "ComCookingConvectionOven" v2.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	20,620.06	15	\$113.87	22%	at stock turnover	\$0.00	34	33	Illinois TRM
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	2,101.53	10	\$234.68	42%	at stock turnover	\$0.02	19	17	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	3,562.73	18	\$513.28	22%	at stock turnover	\$0.02	4	4	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	3,783.73	10	\$1,040.55	82%	at stock turnover	\$0.04	46	42	Developed from RTF "ComCookingConvectionOven" v2.0
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	35,078.84	23	\$109,799.02	8%	at stock turnover	\$0.10	169	161	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	-36,161.49	15	\$78,000.00	45%	50%	\$120.79	-16	-18	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	17,728.30	10	\$15,000.00	15%	35%	\$0.09	126	133	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	246,753.97	15	\$23,810.00	15%	25%	\$0.01	374	374	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	30,810.09	15	\$31,750.00	20%	65%	\$0.07	511	520	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	31,274.14	23	\$107,051.87	1%	at stock turnover	\$0.10	18	19	BEST Simulation
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	18	\$170.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	120,305.67	45	\$126,270.00	15%	35%	\$0.08	868	902	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	29,293.78	45	\$69,280.00	15%	35%	\$0.14	206	220	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	22,986.30	20	\$35,000.00	15%	50%	\$0.10	285	302	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	96,507.51	45	\$77,100.00	15%	35%	\$0.07	705	724	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	34,865.08	3	\$61,000.00	10%	75%	\$0.36	794	850	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	14	\$189,730.00	3%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	25,257.73	3	\$31,750.00	5%	16%	\$0.23	97	111	BEST Simulation
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	143,692.11	20	\$400,000.00	10%	15%	\$0.13	56	56	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	25,677.43	23	\$99,246.51	11%	at stock turnover	\$0.09	63	59	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	29,531.94	3	\$96,000.00	10%	75%	\$0.66	150	151	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	15,627.31	10	\$15,000.00	15%	50%	\$0.10	43	43	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	245,667.47	15	\$23,810.00	15%	25%	\$0.01	72	72	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	26,412.07	15	\$31,750.00	20%	65%	\$0.08	93	94	BEST Simulation
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	21,807.98	23	\$92,442.66	2%	at stock turnover	\$0.10	6	6	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	7,069.85	18	\$150.00	15%	50%	\$0.00	19	19	BEST Simulation
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	39,937.30	45	\$126,270.00	15%	50%	\$0.27	109	110	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	3,855.31	20	\$820.00	15%	50%	\$0.01	11	11	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	25,438.06	45	\$69,280.00	15%	50%	\$0.16	70	70	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	20,184.02	20	\$35,000.00	15%	50%	\$0.12	55	56	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	11,537.65	45	\$77,100.00	15%	50%	\$0.54	32	32	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	New	0.00	14	\$189,730.00	6%	75%	\$10.00	0	0	DEER
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	3,565.72	15	\$31,750.00	20%	65%	\$0.07	273	496	BEST Simulation
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	545.41	15	-\$42.12	100%	at stock turnover	-\$0.03	7	11	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	695.39	15	\$333.68	100%	at stock turnover	\$0.01	1,871	1,746	EIA 2011
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	20,432.33	5	\$36,960.00	5%	15%	\$0.29	116	274	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	Existing	32,088.79	5	\$2,290.00	15%	50%	\$0.01	691	1,442	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	21,221.23	12	\$40,000.00	3%	25%	\$0.17	777	1,869	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	3,211.20	16	\$1,440.00	1%	3%	\$0.03	11	30	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	22,939.48	10	\$5,970.00	7%	45%	\$0.03	1,070	2,405	Ameren Missouri TRM

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Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	25	\$123,000.00	15%	25%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Lighting - Timelocks and Timers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$6,570.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	3,962.44	5	\$11,000.00	10%	25%	\$0.36	26	89	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	175.83	15	\$48.54	100%	at stock turnover	\$0.01	9,290	9,159	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	42.24	15	\$7.24	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	3,368.90	3	\$61,000.00	10%	75%	\$0.35	361	677	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	181.14	6	\$7.52	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	147.43	15	\$136.94	100%	at stock turnover	\$0.06	3,521	2,151	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	2,949.61	3	\$31,750.00	5%	16%	\$0.23	54	168	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	15,677.51	20	\$400,000.00	10%	15%	\$0.13	30	47	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	2,653.05	3	\$96,000.00	10%	75%	\$0.66	66	103	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	2,837.95	15	\$31,750.00	20%	65%	\$0.08	49	77	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	545.41	15	-\$42.12	100%	at stock turnover	-\$0.03	2	3	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	695.39	15	\$333.68	100%	at stock turnover	\$0.01	522	491	EIA 2011
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	16,451.29	5	\$36,960.00	5%	15%	\$0.36	21	33	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	New	25,373.36	5	\$2,290.00	15%	50%	\$0.02	115	180	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	16,656.09	12	\$40,000.00	4%	25%	\$0.21	131	206	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	New	2,555.54	16	\$1,440.00	1%	3%	\$0.04	2	3	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	17,761.03	10	\$5,970.00	22%	45%	\$0.03	72	113	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	New	0.00	25	\$123,000.00	18%	25%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$6,570.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	New	2,727.77	5	\$11,000.00	10%	25%	\$0.51	5	8	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	175.83	15	\$48.54	100%	at stock turnover	\$0.00	2,596	2,570	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	42.24	15	\$7.24	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	181.14	6	\$7.52	100%	at stock turnover	\$0.00	0	0	EIA 2011
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	147.43	15	\$136.94	100%	at stock turnover	\$0.05	1,012	545	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	790.12	7	\$9,320.00	1%	8%	\$0.19	7	7	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	Existing	11.52	7	\$200.00	1%	3%	\$3.32	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	Existing	562.56	10	\$1,300.00	1%	3%	\$0.34	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	Existing	2,644.07	15	\$13,950.00	15%	75%	\$0.63	99	98	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	1,412.00	10	\$9.04	1%	at stock turnover	\$0.00	1	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	Existing	506.71	10	\$27.53	4%	at stock turnover	\$0.01	2	1	Hawaii TRM
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	Existing	19.73	5	\$400.00	15%	75%	\$4.20	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	2,186.90	3	\$31,750.00	5%	16%	\$0.23	47	46	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	911.67	7	\$9,320.00	1%	4%	\$0.18	1	1	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	New	13.35	7	\$10.00	1%	3%	\$0.14	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	New	0.00	13	\$0.00	72%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	New	2,660.05	15	\$13,950.00	15%	75%	\$0.63	23	23	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	1,412.00	10	\$10.44	1%	at stock turnover	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	New	506.71	10	\$31.80	5%	at stock turnover	\$0.01	0	0	Hawaii TRM
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	New	19.05	5	\$400.00	15%	75%	\$4.24	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	8,005.38	6	\$60.07	100%	at stock turnover	\$0.00	282	297	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	Existing	592.66	4	\$2,650.00	10%	50%	\$1.23	140	155	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,576.08	6	\$39.07	100%	at stock turnover	\$0.01	55	59	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,392.43	6	\$94.15	100%	at stock turnover	\$0.01	20	21	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	1,758.61	5	\$4,000.00	10%	25%	\$0.53	158	172	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,628.26	6	\$3.42	28%	at stock turnover	\$0.00	31	33	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,738.68	6	\$22.23	100%	at stock turnover	\$0.00	14	15	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	5,841.93	5	\$28.93	66%	at stock turnover	\$0.00	430	460	Assumed same as Desktop
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	8,005.38	6	\$60.07	100%	at stock turnover	\$0.00	73	72	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	New	660.68	4	\$2,650.00	10%	50%	\$1.08	30	32	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,576.08	6	\$39.07	100%	at stock turnover	\$0.01	14	14	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,392.43	6	\$94.15	100%	at stock turnover	\$0.01	5	5	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	1,977.87	5	\$4,000.00	10%	25%	\$0.47	34	36	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,628.26	6	\$4.11	34%	at stock turnover	\$0.00	9	9	Assumed same as Desktop
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,738.68	6	\$22.23	100%	at stock turnover	\$0.00	3	3	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	5,841.93	5	\$36.16	83%	at stock turnover	\$0.00	107	109	Assumed same as Desktop
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$17,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	Existing	3,408.54	9	\$82.80	22%	at stock turnover	\$0.00	76	70	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	Existing	4.54	9	\$690.00	0%	10%	\$24.40	0	0	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$41,280.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$34,810.00	0%	0%	\$10.00	0	0	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$10,700.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	Existing	15,724.86	10	\$984.46	22%	at stock turnover	\$0.01	250	219	EIA 2011
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$10,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	New	3,408.54	9	\$115.92	30%	at stock turnover	\$0.01	27	24	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	New	4.54	9	\$690.00	0%	10%	\$24.40	0	0	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$41,280.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$34,810.00	0%	0%	\$10.00	0	0	AEO 2013
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$10,700.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	New	15,724.86	10	\$1,378.25	30%	at stock turnover	\$0.02	108	100	EIA 2011
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	-211.31	15	\$78,000.00	45%	50%	\$117.16	0	0	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	4,076.67	15	\$31,750.00	20%	65%	\$0.07	157	189	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	18	\$170.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	4,652.26	50	\$250,000.00	15%	25%	\$1.06	38	54	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	3,433.70	45	\$126,270.00	15%	35%	\$0.08	58	71	BEST Simulation
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$820.00	15%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	2,574.24	20	\$35,000.00	15%	50%	\$0.10	76	93	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	474.71	45	\$77,100.00	15%	35%	\$0.07	8	10	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	4,728.23	3	\$61,000.00	10%	75%	\$0.35	254	317	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,425.21	3	\$31,750.00	5%	16%	\$0.23	31	48	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	Existing	1,228.24	15	\$22,000.00	15%	25%	\$1.94	10	13	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	Existing	11,690.46	18	\$17,000.00	15%	35%	\$0.15	196	241	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	Existing	43,621.95	20	\$40,572.49	100%	at stock turnover	\$0.10	459	464	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	Existing	33,264.15	15	\$7,250.00	13%	25%	\$0.03	339	400	BEST Simulation
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	14,309.48	20	\$400,000.00	10%	15%	\$0.13	14	14	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	2,980.61	3	\$96,000.00	10%	75%	\$0.66	38	38	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	2,609.17	15	\$31,750.00	20%	65%	\$0.08	23	23	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	619.83	18	\$150.00	15%	50%	\$0.00	4	4	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	2,909.19	50	\$250,000.00	15%	25%	\$1.37	6	6	6th Plan
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	234.59	45	\$126,270.00	15%	50%	\$0.27	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	679.62	20	\$820.00	15%	50%	\$0.01	5	5	BEST Simulation
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	1,646.72	20	\$35,000.00	15%	50%	\$0.12	11	11	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	129.43	45	\$77,100.00	15%	50%	\$0.54	1	1	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	New	768.10	15	\$13,000.00	15%	25%	\$1.79	1	2	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	New	7,397.09	18	\$17,000.00	15%	35%	\$0.23	29	29	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	New	41,145.30	20	\$37,856.98	100%	at stock turnover	\$0.10	73	74	BEST Simulation
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	New	21,162.52	15	\$7,250.00	19%	25%	\$0.04	23	23	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	13,356.18	5	\$18,000.00	3%	75%	\$0.25	376	606	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	6,882.39	7	\$9,320.00	1%	8%	\$0.19	19	29	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	Existing	80,527.05	20	\$7,450.00	0%	1%	\$0.01	31	47	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	14,255.54	5	\$4,000.00	1%	10%	\$0.05	52	81	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	Existing	36,838.68	5	\$2,210.00	25%	65%	\$0.01	223	349	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	Existing	4,760.80	15	\$990.00	15%	25%	\$0.02	19	29	Hawaii TRM
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	Existing	383.21	15	\$30.00	15%	75%	\$0.01	9	14	DEER
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	8,915.62	15	\$11,410.00	16%	75%	\$0.12	210	325	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	Existing	30,800.50	20	\$83,330.00	1%	30%	\$0.22	353	554	BEST Simulation
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	Existing	124,271.34	14	\$20,393.10	53%	at stock turnover	\$0.02	4,646	4,468	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	12,818.12	5	\$18,000.00	3%	75%	\$0.25	355	588	AEG study for PN&L
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	39,792.58	20	\$400,000.00	10%	15%	\$0.13	15	21	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	11,767.78	5	\$18,000.00	6%	75%	\$0.25	60	85	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	6,315.39	7	\$9,320.00	1%	4%	\$0.18	1	2	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	New	76,369.47	20	\$7,450.00	0%	1%	\$0.01	7	10	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	13,684.87	5	\$4,000.00	0%	75%	\$0.05	76	109	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	New	34,905.52	5	\$2,210.00	25%	65%	\$0.01	39	56	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	New	4,569.96	15	\$990.00	15%	25%	\$0.02	3	5	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	New	365.08	15	\$30.00	15%	75%	\$0.01	2	2	DEER
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	8,248.82	15	\$11,410.00	1%	75%	\$0.12	45	64	BEST Simulation
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	New	28,168.43	20	\$83,330.00	1%	30%	\$0.22	60	86	BEST Simulation
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	New	124,271.34	14	\$20,393.10	53%	at stock turnover	\$0.02	1,357	1,321	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	12,228.46	5	\$18,000.00	6%	75%	\$0.25	62	89	AEG study for PN&L
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	8,142.55	23	\$5,724.15	7%	at stock turnover	\$0.18	39	33	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	Existing	4,365.37	23	\$1,088.53	0%	at stock turnover	\$0.03	2	2	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	3,210.51	10	\$814.55	15%	75%	\$0.04	1	1	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	158.90	15	\$541.20	15%	75%	\$0.32	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	Existing	81.88	15	\$876.70	15%	75%	\$0.98	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	Existing	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	617.22	10	\$825.00	15%	35%	\$0.08	25	27	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	2,829.37	15	\$3,571.70	15%	75%	\$0.03	0	0	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,038.79	15	\$1,746.25	20%	65%	\$0.06	94	103	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	Existing	1,992.20	15	\$11,959.17	7%	at stock turnover	\$0.74	24	22	PacifiCorp Program Data
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	7,181.15	23	\$4,710.41	3%	at stock turnover	\$0.17	21	21	BEST Simulation
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	-59.65	18	\$23.10	15%	50%	\$0.65	-2	-3	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	Existing	4,203.63	10	\$7,201.15	18%	75%	\$0.23	180	222	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	2,169.47	15	\$260.15	15%	75%	\$0.14	259	288	BEST Simulation
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	1,095.35	50	\$13,750.00	15%	25%	\$0.59	20	27	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	108.16	45	\$6,944.85	15%	35%	\$0.14	4	5	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	995.22	45	\$3,810.40	15%	35%	\$0.14	38	44	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	638.77	20	\$1,925.00	15%	50%	\$0.09	43	49	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	-445.58	45	\$4,240.50	15%	35%	\$0.09	-17	-20	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	Existing	3,282.87	15	\$2,067.84	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	1,113.54	3	\$3,355.00	10%	75%	\$0.29	136	160	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	Existing	6,383.06	23	\$5,873.10	77%	at stock turnover	\$0.10	160	161	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$31,664.60	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	Existing	6,802.55	23	\$1,646.99	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$541.20	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$2,488.20	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	4,696.87	20	\$22,000.00	10%	25%	\$0.08	23	23	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	7,907.27	23	\$5,230.51	8%	at stock turnover	\$0.17	11	9	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	New	4,271.09	23	\$1,040.72	0%	at stock turnover	\$0.03	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	2,922.79	10	\$814.55	15%	75%	\$0.04	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	137.21	15	\$541.20	15%	75%	\$0.33	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$876.70	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	New	862.69	3	\$5,280.00	10%	75%	\$0.52	18	18	6th Plan
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	New	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	490.23	10	\$825.00	15%	50%	\$0.09	5	6	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	535.19	15	\$3,571.70	15%	75%	\$0.03	0	0	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	New	852.38	15	\$1,746.25	20%	65%	\$0.06	12	13	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	New	1,992.20	15	\$14,317.31	8%	at stock turnover	\$0.88	6	5	PacificCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	6,973.31	23	\$4,304.19	4%	at stock turnover	\$0.15	6	6	BEST Simulation
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	5.88	18	\$22.00	15%	35%	\$0.02	0	0	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	New	3,239.52	10	\$7,201.15	18%	75%	\$0.29	9	9	DEER
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	1,751.89	15	\$260.15	15%	75%	\$0.21	34	34	BEST Simulation
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	842.26	50	\$13,750.00	15%	25%	\$0.74	3	3	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	-4.18	45	\$6,944.85	15%	50%	\$0.83	0	0	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	170.61	20	\$45.10	15%	50%	\$0.07	2	2	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	806.18	45	\$3,810.40	15%	50%	\$0.15	9	9	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	519.53	20	\$1,925.00	15%	50%	\$0.11	6	6	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	-6.74	45	\$4,240.50	15%	50%	\$0.59	0	0	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	New	2,872.93	15	\$1,961.55	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	New	6,198.75	23	\$5,366.62	93%	at stock turnover	\$0.09	45	45	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$31,664.60	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	New	6,636.60	23	\$1,574.66	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$541.20	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$2,488.20	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	163.60	15	\$1,746.25	20%	65%	\$0.06	32	52	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	486.62	5	\$410.30	15%	25%	\$0.14	21	43	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	156.18	10	\$629.75	33%	60%	\$0.41	18	38	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	Existing	2,821.31	10	\$985.60	15%	30%	\$0.04	192	362	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	841.81	15	-\$27.09	100%	at stock turnover	-\$0.01	4	6	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,073.29	15	\$214.59	100%	at stock turnover	\$0.00	1,062	992	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	162.80	15	\$34.27	100%	at stock turnover	\$0.01	328	316	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	37.13	15	\$2.65	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	160.77	3	\$3,355.00	10%	75%	\$0.29	45	74	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	144.11	6	\$2.49	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	117.29	15	\$45.39	100%	at stock turnover	\$0.02	164	100	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
			Restaurant bldg.										
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	767.77	20	\$22,000.00	10%	25%	\$0.08	7	10	AEG research & analysis
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	131.42	3	\$5,280.00	10%	75%	\$0.52	5	7	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	138.98	15	\$1,746.25	20%	65%	\$0.06	4	6	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	400.92	5	\$410.30	15%	25%	\$0.16	2	4	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	210.13	10	\$629.75	44%	60%	\$0.28	2	3	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	New	2,397.90	10	\$985.60	15%	30%	\$0.04	21	32	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	841.81	15	-\$27.09	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,073.29	15	\$214.59	100%	at stock turnover	\$0.00	197	186	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	162.80	15	\$34.27	100%	at stock turnover	\$0.01	59	57	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	37.13	15	\$2.65	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	144.11	6	\$2.49	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	117.29	15	\$45.39	100%	at stock turnover	\$0.02	29	16	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	38,284.72	15	\$514.59	53%	at stock turnover	-\$0.01	1,126	1,102	Illinois TRM
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	7,803.69	10	\$185.29	9%	at stock turnover	\$0.00	135	118	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	6,614.82	18	\$2,319.58	53%	at stock turnover	\$0.04	150	149	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	14,050.30	10	\$712.24	15%	at stock turnover	\$0.01	280	243	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	38,284.72	15	\$979.99	100%	at stock turnover	-\$0.01	423	412	Illinois TRM
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	7,803.69	10	\$352.86	17%	at stock turnover	\$0.01	43	38	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	6,614.82	18	\$4,417.43	100%	at stock turnover	\$0.07	48	48	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	14,050.30	10	\$1,356.40	29%	at stock turnover	\$0.01	88	80	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	1,289.88	23	\$15,655.13	7%	at stock turnover	\$0.18	5	5	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	819.66	10	\$825.00	15%	35%	\$0.08	14	14	AEG research & analysis
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	11,483.25	15	\$3,571.70	15%	75%	\$0.03	18	18	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,379.88	15	\$1,746.25	20%	65%	\$0.06	52	53	BEST Simulation
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	1,657.82	23	\$14,044.23	3%	at stock turnover	\$0.17	4	5	BEST Simulation
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	-225.73	18	\$23.10	15%	50%	\$0.66	-4	-4	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	-1,790.72	15	\$260.15	15%	75%	\$0.14	-90	-92	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	4,088.33	45	\$6,944.85	15%	35%	\$0.14	68	70	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	1,358.49	45	\$3,810.40	15%	35%	\$0.14	23	23	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	1,081.25	20	\$1,925.00	15%	50%	\$0.09	32	32	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	4,359.24	45	\$4,240.50	15%	35%	\$0.09	74	75	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	1,603.47	3	\$3,355.00	10%	75%	\$0.29	85	89	6th Plan
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	Existing	0.00	14	\$43,819.05	3%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	7,262.30	20	\$22,000.00	10%	25%	\$0.08	12	12	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	1,385.34	23	\$14,973.54	8%	at stock turnover	\$0.17	2	1	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	New	1,511.59	3	\$5,280.00	10%	75%	\$0.52	11	11	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	757.95	10	\$825.00	15%	50%	\$0.09	3	3	AEG research & analysis
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	11,490.22	15	\$3,571.70	15%	75%	\$0.04	2	2	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	New	1,313.91	15	\$1,746.25	20%	65%	\$0.06	7	7	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	1,778.53	23	\$12,833.09	4%	at stock turnover	\$0.15	2	2	BEST Simulation
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	-130.25	18	\$22.00	15%	35%	\$0.02	0	0	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	-1,546.28	15	\$260.15	15%	75%	\$0.21	-10	-10	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	684.21	45	\$6,944.85	15%	50%	\$0.83	3	3	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	-108.36	20	\$45.10	15%	50%	\$0.07	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	1,244.53	45	\$3,810.40	15%	50%	\$0.15	5	5	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	978.96	20	\$1,925.00	15%	50%	\$0.11	4	4	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	573.48	45	\$4,240.50	15%	50%	\$0.59	2	2	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	New	0.00	14	\$43,819.05	6%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	346.19	15	\$1,746.25	20%	65%	\$0.06	58	110	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	401.94	15	-\$16.17	100%	at stock turnover	-\$0.02	1	2	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	512.46	15	\$128.07	100%	at stock turnover	\$0.00	283	264	EIA 2011
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	1,896.01	5	\$4,042.50	5%	15%	\$0.33	24	59	Illinois TRM
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	Existing	2,998.21	5	\$338.25	15%	50%	\$0.02	145	309	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	2,060.76	12	\$2,200.00	3%	25%	\$0.09	164	422	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	Existing	311.77	16	\$212.85	1%	3%	\$0.05	2	7	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	2,224.15	10	\$882.20	7%	45%	\$0.04	225	543	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	Existing	0.00	25	\$6,765.00	15%	25%	\$10.00	0	0	DEER

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Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$970.75	7%	15%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	Existing	529.44	5	\$605.00	10%	25%	\$0.15	7	28	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	165.15	15	\$32.41	100%	at stock turnover	\$0.01	1,995	1,950	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	38.64	15	\$3.45	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	330.34	3	\$3,355.00	10%	75%	\$0.28	77	151	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	159.57	6	\$3.68	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	129.87	15	\$67.02	100%	at stock turnover	\$0.03	975	595	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	1,445.01	20	\$22,000.00	10%	25%	\$0.08	12	19	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	240.36	3	\$5,280.00	10%	75%	\$0.52	9	14	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	261.71	15	\$1,746.25	20%	65%	\$0.06	7	10	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	401.94	15	-\$16.17	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	512.46	15	\$128.07	100%	at stock turnover	\$0.00	52	50	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	1,466.60	5	\$4,042.50	5%	15%	\$0.42	3	4	Illinois TRM
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	New	2,300.36	5	\$338.25	15%	50%	\$0.03	15	24	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	1,509.26	12	\$2,200.00	4%	25%	\$0.12	17	27	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	New	232.36	16	\$212.85	1%	3%	\$0.07	0	0	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	1,636.83	10	\$882.20	22%	45%	\$0.05	10	15	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	New	0.00	25	\$6,765.00	18%	25%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$970.75	7%	15%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	New	321.21	5	\$605.00	10%	25%	\$0.24	1	1	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	165.15	15	\$32.41	100%	at stock turnover	\$0.01	357	350	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	38.64	15	\$3.45	100%	at stock turnover	\$0.00	0	0	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	159.57	6	\$3.68	100%	at stock turnover	\$0.00	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	129.87	15	\$67.02	100%	at stock turnover	\$0.03	172	93	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	15.93	7	\$1,397.55	1%	4%	\$0.28	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	Existing	0.23	7	\$30.80	1%	3%	\$25.35	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	Existing	11.39	10	\$194.70	1%	3%	\$2.55	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	Existing	0.00	13	\$0.00	20%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	Existing	409.35	15	\$16,305.30	15%	75%	\$4.77	12	12	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	77.66	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	Existing	13.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	15.98	7	\$1,397.55	1%	2%	\$0.28	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	New	0.23	7	\$1.65	1%	3%	\$1.35	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	New	410.30	15	\$16,305.30	15%	75%	\$4.76	2	2	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	New	77.66	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	New	13.93	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$55,000.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	485.04	6	\$3.64	100%	at stock turnover	\$0.00	39	41	ENERGY STAR Calculator
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	Existing	2.15	4	\$145.75	10%	50%	\$18.63	1	1	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	76.39	6	\$1.89	100%	at stock turnover	\$0.01	6	6	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	84.37	6	\$5.70	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	6.30	5	\$220.00	10%	25%	\$8.02	1	2	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	197.31	6	\$1.48	100%	at stock turnover	\$0.00	29	31	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	210.69	6	\$2.69	100%	at stock turnover	\$0.00	4	4	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	707.92	5	\$2.66	50%	at stock turnover	\$0.00	105	111	Assumed same as Desktop
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,500.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	485.04	6	\$3.64	100%	at stock turnover	\$0.00	6	6	ENERGY STAR Calculator
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	New	2.06	4	\$145.75	10%	50%	\$19.40	0	0	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	76.39	6	\$1.89	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	84.37	6	\$5.70	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	6.03	5	\$220.00	10%	25%	\$8.36	0	0	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	197.31	6	\$1.48	100%	at stock turnover	\$0.00	5	5	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	210.69	6	\$2.69	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	707.92	5	\$2.92	55%	at stock turnover	\$0.00	15	15	Assumed same as Desktop
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,631.20	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	Existing	1,633.13	9	\$178.71	97%	at stock turnover	\$0.02	95	87	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	Existing	681.41	8	\$2,542.65	0%	75%	\$0.61	6	6	Developed from RTF
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	Existing	3.97	9	\$102.85	0%	75%	\$3.80	0	0	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	Existing	945.77	15	\$6,855.20	0%	75%	\$0.77	445	503	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	Existing	2,057.60	15	\$5,221.15	0%	75%	\$0.29	993	1,069	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	Existing	1,858.30	4	\$2,121.90	0%	75%	\$0.31	238	247	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	Existing	3,767.11	10	\$1,062.38	97%	at stock turnover	\$0.06	636	556	EIA 2011
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$1,547.15	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	New	1,633.13	9	\$183.67	100%	at stock turnover	\$0.02	16	14	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	New	686.05	8	\$2,542.65	0%	75%	\$0.61	1	1	Developed from RTF
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	New	3.99	9	\$102.85	0%	75%	\$3.80	0	0	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	New	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	New	928.17	15	\$6,855.20	0%	75%	\$0.80	58	59	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	New	2,012.03	15	\$5,221.15	0%	75%	\$0.30	126	129	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	New	1,864.62	4	\$2,121.90	0%	75%	\$0.31	31	31	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	New	3,767.11	10	\$1,091.86	100%	at stock turnover	\$0.07	112	103	EIA 2011
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$825.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	529.43	15	\$1,746.25	20%	65%	\$0.06	47	56	BEST Simulation
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	263.48	18	\$23.10	15%	50%	\$0.64	11	15	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	-152.17	15	\$260.15	15%	75%	\$0.14	-18	-21	BEST Simulation
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	608.24	50	\$13,750.00	15%	25%	\$0.59	12	16	6th Plan
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	0.00	45	\$6,944.85	15%	35%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	332.75	20	\$1,925.00	15%	50%	\$0.09	23	27	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	60.83	45	\$4,240.50	15%	35%	\$0.09	2	3	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	618.28	3	\$3,355.00	10%	75%	\$0.29	78	94	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	Existing	160.58	15	\$1,210.00	15%	25%	\$0.79	3	4	6th Plan
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	Existing	1,531.33	18	\$935.00	15%	35%	\$0.06	60	72	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	Existing	3,804.79	20	\$5,817.97	100%	at stock turnover	\$0.16	123	125	BEST Simulation
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	Existing	4,331.72	15	\$1,673.10	13%	50%	\$0.05	336	373	BEST Simulation
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	2,263.22	20	\$22,000.00	10%	25%	\$0.08	10	10	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	New	472.14	3	\$5,280.00	10%	75%	\$0.52	9	9	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$825.00	15%	50%	\$0.00	0	0	AEG research & analysis
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	New	446.34	15	\$1,746.25	20%	65%	\$0.06	6	6	BEST Simulation
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	228.00	18	\$22.00	15%	35%	\$0.02	1	1	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	-131.50	15	\$260.15	15%	75%	\$0.21	-2	-2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	460.15	50	\$13,750.00	15%	25%	\$0.74	1	1	6th Plan
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	0.00	45	\$6,944.85	15%	50%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	0.70	20	\$45.10	15%	50%	\$0.07	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	251.99	20	\$1,925.00	15%	50%	\$0.11	3	3	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	20.00	45	\$4,240.50	15%	50%	\$0.59	0	0	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	New	122.06	15	\$715.00	15%	25%	\$0.59	0	0	6th Plan
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	New	1,201.66	18	\$935.00	15%	35%	\$0.08	7	7	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	New	3,211.75	20	\$5,605.46	100%	at stock turnover	\$0.18	10	10	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	New	3,038.95	15	\$1,673.10	19%	50%	\$0.06	27	27	BEST Simulation
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,114.82	5	\$990.00	3%	75%	\$0.07	298	313	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	772.69	7	\$1,397.55	1%	4%	\$0.28	3	3	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	Existing	18,194.68	20	\$1,117.60	0%	3%	\$0.01	73	74	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,429.19	5	\$220.00	1%	10%	\$0.02	43	43	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	Existing	8,223.05	5	\$551.65	25%	65%	\$0.02	166	170	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$269.50	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	Existing	17.14	15	\$1.65	15%	75%	\$0.01	1	1	DEER
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	2,003.12	15	\$1,036.20	16%	75%	\$0.06	158	164	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	Existing	6,347.03	20	\$25,000.25	1%	30%	\$0.34	237	263	BEST Simulation
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	Existing	694.07	13	\$37.04	58%	at stock turnover	\$0.01	64	61	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	2,983.06	5	\$990.00	3%	75%	\$0.07	282	304	AEG study for PN&L
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	8,689.94	20	\$22,000.00	10%	25%	\$0.08	23	23	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,019.58	5	\$990.00	6%	75%	\$0.07	36	37	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	739.27	7	\$1,397.55	1%	2%	\$0.28	0	0	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	New	18,147.60	20	\$1,117.60	0%	4%	\$0.01	11	11	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,233.34	5	\$220.00	0%	75%	\$0.02	42	43	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	New	8,237.08	5	\$551.65	25%	65%	\$0.02	22	22	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$269.50	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	New	17.15	15	\$1.65	15%	75%	\$0.01	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	1,948.28	15	\$1,036.20	1%	75%	\$0.06	25	25	BEST Simulation
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	New	6,046.74	20	\$25,000.25	1%	30%	\$0.34	30	31	BEST Simulation
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	New	694.07	13	\$37.04	61%	at stock turnover	\$0.01	13	12	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	2,904.05	5	\$990.00	6%	75%	\$0.07	35	35	AEG study for PN&L
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	10,786.25	23	\$143,637.21	5%	at stock turnover	\$0.15	40	35	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft School bldg.	Existing	11,244.08	23	\$19,160.32	39%	at stock turnover	\$0.18	366	369	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	7,328.32	10	\$813.00	15%	75%	\$0.02	388	435	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	2,162.95	15	\$1,179.00	15%	75%	\$0.06	112	131	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	Existing	404.91	15	\$4,284.00	15%	75%	\$0.98	20	26	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	5,563.26	15	\$23,400.00	45%	50%	\$0.97	48	57	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Destratification Fans (HVLS)	per 30,000 sqft School bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	1,176.26	10	\$4,500.00	15%	35%	\$0.12	43	48	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	Existing	1,979.43	15	\$9,525.00	20%	65%	\$0.09	164	183	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	Existing	2,634.06	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	9,509.06	23	\$118,078.20	4%	at stock turnover	\$0.11	12	12	BEST Simulation
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	1,005.52	18	\$114.00	15%	50%	\$0.02	65	76	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	Existing	7,969.37	10	\$35,199.00	18%	75%	\$0.56	341	429	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	2,103.72	50	\$75,000.00	15%	25%	\$1.66	36	48	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	257.04	45	\$37,881.00	15%	35%	\$0.31	9	11	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	2,869.47	20	\$246.00	15%	35%	\$0.01	108	118	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	1,946.14	45	\$20,784.00	15%	35%	\$0.19	70	80	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	1,251.48	20	\$10,500.00	15%	50%	\$0.14	79	90	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	-886.23	45	\$23,130.00	15%	35%	\$0.09	-32	-36	BEST Simulation
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	Existing	4,340.99	15	\$23,923.96	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	Existing	2,308.06	3	\$18,300.00	10%	75%	\$0.48	269	308	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	Existing	3,546.16	23	\$28,341.34	26%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	Existing	0.00	15	\$154,779.00	15%	75%	\$10.00	0	0	DEER
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	1,677.27	3	\$9,525.00	2%	22%	\$0.31	60	80	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	Existing	21,953.18	23	\$28,990.40	10%	at stock turnover	\$0.14	22	22	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	5,815.93	10	\$813.00	15%	75%	\$0.02	72	90	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	Existing	8,566.60	4	\$813.00	15%	75%	\$0.02	105	133	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	3,318.06	15	\$1,179.00	15%	75%	\$0.04	40	53	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	Existing	440.45	15	\$5,421.00	15%	75%	\$1.06	5	7	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation

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School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	6,456.89	20	\$120,000.00	10%	25%	\$0.18	12	13	AEG research & analysis
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	9,878.60	23	\$142,392.58	6%	at stock turnover	\$0.16	5	4	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft School bldg.	New	6,728.40	23	\$15,050.94	41%	at stock turnover	\$0.23	35	35	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	4,530.84	10	\$813.00	15%	75%	\$0.02	16	16	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	1,983.73	15	\$1,179.00	15%	75%	\$0.06	7	7	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	New	217.47	15	\$4,284.00	15%	75%	\$1.64	1	1	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	New	1,322.83	3	\$28,800.00	10%	75%	\$0.89	11	11	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	841.66	15	\$23,400.00	45%	50%	\$10.16	1	1	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Cooling	Destratification Fans (HVLS)	per 30,000 sqft School bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	701.10	10	\$4,500.00	15%	50%	\$0.14	3	3	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	New	1,184.86	15	\$9,525.00	20%	65%	\$0.11	7	7	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	New	2,634.06	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	8,704.13	23	\$117,055.04	5%	at stock turnover	\$0.13	5	5	BEST Simulation
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	523.66	18	\$114.00	15%	35%	\$0.49	1	1	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	New	4,463.73	10	\$35,199.00	18%	75%	\$0.94	5	5	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	1,209.22	50	\$75,000.00	15%	25%	\$2.77	2	2	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	-169.72	45	\$37,881.00	15%	50%	\$1.88	-1	-1	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	1,577.18	20	\$246.00	15%	50%	\$0.04	7	7	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	1,123.35	45	\$20,784.00	15%	50%	\$0.22	5	5	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	743.03	20	\$10,500.00	15%	50%	\$0.16	3	3	BEST Simulation
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	-10.58	45	\$23,130.00	15%	50%	\$0.63	0	0	BEST Simulation
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	New	3,854.78	15	\$23,881.65	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	New	3,243.37	23	\$28,095.76	29%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	New	0.00	15	\$154,779.00	15%	75%	\$10.00	0	0	DEER
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	New	962.41	3	\$9,525.00	2%	22%	\$0.37	2	3	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	New	14,618.47	23	\$22,772.72	10%	at stock turnover	\$0.16	2	2	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	2,974.78	10	\$813.00	15%	75%	\$0.04	3	3	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	New	4,358.33	4	\$813.00	15%	75%	\$0.05	4	4	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	2,450.85	15	\$1,179.00	15%	75%	\$0.05	2	2	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	New	221.76	15	\$5,421.00	15%	75%	\$2.12	0	0	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	324.36	15	\$9,525.00	20%	65%	\$0.09	70	108	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	860.73	5	\$13,092.00	15%	25%	\$2.59	39	79	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	670.62	10	\$3,381.00	33%	60%	\$0.53	83	168	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	Existing	5,144.00	10	\$5,292.00	15%	30%	\$0.12	366	686	AEG research & analysis
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	324.19	15	-\$22.76	100%	at stock turnover	-\$0.03	2	3	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	413.34	15	\$180.31	100%	at stock turnover	\$0.01	490	459	EIA 2011
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	96.28	15	\$24.16	100%	at stock turnover	\$0.00	2,497	2,462	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	23.13	15	\$3.60	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	296.06	3	\$18,300.00	10%	75%	\$0.48	88	142	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	97.17	6	\$3.67	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	79.08	15	\$66.78	100%	at stock turnover	\$0.05	11	7	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	258.15	3	\$9,525.00	2%	22%	\$0.31	24	53	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	1,470.64	20	\$120,000.00	10%	25%	\$0.18	6	10	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	New	251.38	3	\$28,800.00	10%	75%	\$0.89	5	7	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	287.15	15	\$9,525.00	20%	65%	\$0.11	4	6	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	New	739.41	5	\$13,092.00	15%	25%	\$2.81	2	3	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	666.39	10	\$3,381.00	44%	60%	\$0.51	3	5	AEG research & analysis
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	New	4,531.66	10	\$5,292.00	15%	30%	\$0.13	20	31	AEG research & analysis
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	324.19	15	-\$22.76	100%	at stock turnover	-\$0.03	0	0	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	413.34	15	\$180.31	100%	at stock turnover	\$0.01	42	40	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	96.28	15	\$24.16	100%	at stock turnover	\$0.00	215	213	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	23.13	15	\$3.60	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	97.17	6	\$3.67	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	79.08	15	\$66.78	100%	at stock turnover	\$0.05	1	1	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	221.66	3	\$9,525.00	2%	22%	\$0.37	1	2	BEST Simulation
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	Existing	7,185.26	15	\$96.23	52%	at stock turnover	-\$0.01	221	216	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	732.30	10	\$114.48	59%	at stock turnover	\$0.02	88	76	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	Existing	1,241.47	18	\$433.79	52%	at stock turnover	\$0.04	29	29	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	Existing	1,318.48	10	\$284.93	65%	at stock turnover	\$0.03	117	102	Developed from RTF "ComCookingConvectionOven" v2.0
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	New	7,185.26	15	\$134.73	73%	at stock turnover	-\$0.01	29	29	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	New	732.30	10	\$160.27	82%	at stock turnover	\$0.03	10	9	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	New	1,241.47	18	\$607.31	73%	at stock turnover	\$0.05	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	New	1,318.48	10	\$398.91	91%	at stock turnover	\$0.05	13	12	Developed from RTF "ComCookingConvectionOven" v2.0
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	9,569.74	23	\$27,676.11	5%	at stock turnover	\$0.15	32	28	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	-3,633.17	15	\$23,400.00	45%	50%	\$0.98	-10	-11	BEST Simulation
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	4,274.96	10	\$4,500.00	15%	35%	\$0.12	50	53	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	67,749.53	15	\$3,573.00	15%	25%	\$0.01	267	267	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	Existing	7,196.02	15	\$9,525.00	20%	65%	\$0.09	191	199	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	14,669.83	23	\$26,069.46	4%	at stock turnover	\$0.11	17	17	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	-841.42	18	\$114.00	15%	50%	\$0.02	-18	-18	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	9,964.13	45	\$37,881.00	15%	35%	\$0.31	115	123	BEST Simulation
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	-961.56	20	\$246.00	15%	35%	\$0.01	-11	-12	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	7,063.80	45	\$20,784.00	15%	35%	\$0.19	82	87	BPA
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	5,542.85	20	\$10,500.00	15%	50%	\$0.14	113	119	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	23,089.55	45	\$23,130.00	15%	35%	\$0.09	276	284	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	Existing	8,329.03	3	\$18,300.00	10%	75%	\$0.48	311	333	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	Existing	0.00	14	\$101,028.00	3%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	6,052.93	3	\$9,525.00	2%	22%	\$0.31	70	80	BEST Simulation
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	36,857.72	20	\$120,000.00	10%	25%	\$0.18	22	22	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	8,988.49	23	\$28,289.48	6%	at stock turnover	\$0.16	4	3	BEST Simulation
School	Heating	Commissioning	per 30,000 sqft School bldg.	New	7,538.76	3	\$28,800.00	10%	75%	\$0.89	19	19	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	-757.59	15	\$23,400.00	45%	50%	\$10.16	0	0	BEST Simulation
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	4,008.47	10	\$4,500.00	15%	50%	\$0.14	5	6	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	67,749.53	15	\$3,573.00	15%	25%	\$0.01	16	16	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	New	6,774.80	15	\$9,525.00	20%	65%	\$0.11	12	12	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	12,765.40	23	\$25,843.55	5%	at stock turnover	\$0.13	7	7	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	-847.23	18	\$114.00	15%	35%	\$0.49	-1	-1	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	1,776.21	45	\$37,881.00	15%	50%	\$1.88	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	-1,061.23	20	\$246.00	15%	50%	\$0.04	-1	-1	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	6,411.51	45	\$20,784.00	15%	50%	\$0.22	9	9	BPA
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	5,177.29	20	\$10,500.00	15%	50%	\$0.16	7	7	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	2,945.26	45	\$23,130.00	15%	50%	\$0.63	4	4	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	New	0.00	14	\$101,028.00	6%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	New	5,492.62	3	\$9,525.00	2%	22%	\$0.37	4	4	BEST Simulation
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	900.50	15	\$9,525.00	20%	65%	\$0.09	174	299	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	740.21	15	-\$57.74	100%	at stock turnover	-\$0.03	4	7	EIA 2011
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	943.75	15	\$457.42	100%	at stock turnover	\$0.01	1,122	1,051	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	6,223.66	5	\$9,696.00	5%	15%	\$0.25	87	196	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	Existing	9,758.95	5	\$438.00	15%	50%	\$0.01	519	1,027	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	5,358.02	12	\$12,000.00	3%	25%	\$0.21	495	1,096	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	Existing	810.98	16	\$276.00	1%	3%	\$0.03	7	17	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	5,802.30	10	\$1,140.00	7%	45%	\$0.02	681	1,412	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft School bldg.	Existing	0.00	8	\$1,278.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	Existing	358.01	5	\$3,300.00	10%	25%	\$1.16	5	20	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	229.94	15	\$48.74	100%	at stock turnover	\$0.00	6,799	7,014	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	56.77	15	\$10.05	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	847.44	3	\$18,300.00	10%	75%	\$0.48	229	407	6th Plan
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	298.96	6	\$12.54	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	243.32	15	\$228.29	100%	at stock turnover	\$0.06	639	390	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	738.88	3	\$9,525.00	2%	22%	\$0.31	61	172	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	4,230.26	20	\$120,000.00	10%	25%	\$0.18	18	29	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	New	700.11	3	\$28,800.00	10%	75%	\$0.89	13	21	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	765.81	15	\$9,525.00	20%	65%	\$0.11	10	16	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	740.21	15	-\$57.74	100%	at stock turnover	-\$0.03	0	1	EIA 2011
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	943.75	15	\$457.42	100%	at stock turnover	\$0.01	97	91	EIA 2011
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	New	5,216.53	5	\$9,696.00	5%	15%	\$0.30	5	8	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	New	8,187.34	5	\$438.00	15%	50%	\$0.01	27	44	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	4,417.58	12	\$12,000.00	4%	25%	\$0.25	26	41	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	New	689.60	16	\$276.00	1%	3%	\$0.03	0	1	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	New	4,793.63	10	\$1,140.00	22%	45%	\$0.03	14	23	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft School bldg.	New	0.00	8	\$1,278.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	New	196.90	5	\$3,300.00	10%	25%	\$2.06	0	0	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	229.94	15	\$48.74	100%	at stock turnover	\$0.00	589	604	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	56.77	15	\$10.05	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	298.96	6	\$12.54	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	243.32	15	\$228.29	100%	at stock turnover	\$0.05	55	30	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	609.46	3	\$9,525.00	2%	22%	\$0.37	3	6	BEST Simulation
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	294.90	7	\$1,398.00	1%	4%	\$0.25	3	3	Developed from RTF
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	Existing	4.29	7	\$30.00	1%	3%	\$1.33	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	Existing	210.91	10	\$195.00	1%	3%	\$0.14	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	Existing	0.00	13	\$0.00	44%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	Existing	533.28	15	\$96.00	15%	75%	\$0.02	35	34	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	Existing	567.38	10	\$3.63	1%	at stock turnover	\$0.00	1	1	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	Existing	407.22	10	\$33.19	6%	at stock turnover	\$0.01	5	4	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	Existing	15.80	5	\$60.00	15%	75%	\$0.78	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	543.94	3	\$9,525.00	2%	22%	\$0.31	47	46	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	294.94	7	\$1,398.00	1%	2%	\$0.25	0	0	Developed from RTF
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	New	4.32	7	\$3.00	1%	3%	\$0.13	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	New	534.58	15	\$96.00	15%	75%	\$0.02	2	2	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	New	567.38	10	\$4.36	1%	at stock turnover	\$0.00	0	0	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	New	407.22	10	\$39.82	7%	at stock turnover	\$0.01	0	0	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	New	15.25	5	\$60.00	15%	75%	\$0.79	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	New	528.93	3	\$9,525.00	2%	22%	\$0.37	3	3	BEST Simulation
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	2,885.99	6	\$21.65	100%	at stock turnover	\$0.00	242	256	ENERGY STAR Calculator
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	Existing	475.47	4	\$795.00	10%	50%	\$0.45	271	315	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	Existing	227.27	6	\$5.63	100%	at stock turnover	\$0.01	19	20	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	Existing	501.98	6	\$33.94	100%	at stock turnover	\$0.01	17	18	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	Existing	1,451.41	5	\$1,200.00	10%	25%	\$0.19	324	361	5th Plan
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	Existing	117.40	6	\$0.32	36%	at stock turnover	\$0.00	7	7	Assumed same as Desktop
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	Existing	626.81	6	\$8.01	100%	at stock turnover	\$0.00	12	13	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	Existing	842.42	5	\$6.32	100%	at stock turnover	\$0.00	185	199	Assumed same as Desktop
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	New	2,885.99	6	\$21.65	100%	at stock turnover	\$0.00	19	19	ENERGY STAR Calculator
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	New	452.66	4	\$795.00	10%	50%	\$0.46	16	17	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	New	227.27	6	\$5.63	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	New	501.98	6	\$33.94	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	New	1,408.62	5	\$1,200.00	10%	25%	\$0.20	18	20	5th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	New	117.40	6	\$0.32	36%	at stock turnover	\$0.00	1	1	Assumed same as Desktop
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	New	626.81	6	\$8.01	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	New	842.42	5	\$6.32	100%	at stock turnover	\$0.00	13	13	Assumed same as Desktop
School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	Existing	606.03	9	\$44.78	66%	at stock turnover	\$0.01	26	24	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	Existing	1,621.86	8	\$2,544.00	0%	25%	\$0.27	65	66	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	Existing	0.78	9	\$102.00	0%	25%	\$20.29	0	0	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	Existing	204.69	15	\$315.00	0%	25%	\$0.18	38	41	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	Existing	402.04	15	\$5,220.00	0%	25%	\$1.45	74	81	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	Existing	355.87	4	\$4,524.00	0%	25%	\$3.61	4	4	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	Existing	1,397.92	10	\$266.20	66%	at stock turnover	\$0.04	173	151	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	New	606.03	9	\$62.69	92%	at stock turnover	\$0.02	3	2	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	New	1,622.87	8	\$2,544.00	0%	25%	\$0.27	5	5	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	New	0.78	9	\$102.00	0%	25%	\$20.29	0	0	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	New	201.32	15	\$315.00	0%	25%	\$0.18	3	3	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	New	395.92	15	\$5,220.00	0%	25%	\$1.48	6	6	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	New	356.33	4	\$4,524.00	0%	25%	\$3.61	0	0	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	New	1,397.92	10	\$372.68	92%	at stock turnover	\$0.06	22	20	EIA 2011
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	0.00	15	\$23,400.00	45%	50%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	Existing	848.33	15	\$9,525.00	20%	65%	\$0.09	70	94	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	464.07	18	\$114.00	15%	50%	\$0.02	32	45	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	970.53	50	\$75,000.00	15%	25%	\$1.66	17	28	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	538.03	20	\$10,500.00	15%	50%	\$0.14	34	46	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	99.77	45	\$23,130.00	15%	35%	\$0.09	4	5	BEST Simulation
School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	Existing	985.79	3	\$18,300.00	10%	75%	\$0.48	114	158	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	716.33	3	\$9,525.00	2%	22%	\$0.31	26	47	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	Existing	256.25	15	\$6,600.00	15%	75%	\$2.68	27	38	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	Existing	2,443.80	18	\$5,100.00	15%	35%	\$0.21	88	120	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	Existing	12,317.09	20	\$21,356.52	100%	at stock turnover	\$0.18	130	131	BEST Simulation
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	Existing	7,224.63	15	\$3,858.00	13%	50%	\$0.06	522	652	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	3,096.23	20	\$120,000.00	10%	25%	\$0.18	7	7	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	New	629.11	3	\$28,800.00	10%	75%	\$0.89	6	6	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	0.00	15	\$23,400.00	45%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	New	564.53	15	\$9,525.00	20%	65%	\$0.11	4	4	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	269.02	18	\$114.00	15%	35%	\$0.49	1	1	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	610.52	50	\$75,000.00	15%	25%	\$2.77	1	1	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	0.00	45	\$37,881.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	356.31	20	\$10,500.00	15%	50%	\$0.16	2	2	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	27.32	45	\$23,130.00	15%	50%	\$0.63	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	New	458.12	3	\$9,525.00	2%	22%	\$0.37	1	1	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	New	162.74	15	\$3,900.00	15%	75%	\$2.38	1	1	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	New	1,572.84	18	\$5,100.00	15%	35%	\$0.31	5	5	DEER
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	New	12,462.35	20	\$21,346.63	100%	at stock turnover	\$0.18	4	4	BEST Simulation
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	New	4,884.58	15	\$3,858.00	19%	50%	\$0.09	22	22	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,594.14	5	\$5,400.00	3%	75%	\$0.43	221	240	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	644.97	7	\$1,398.00	1%	4%	\$0.25	2	2	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	Existing	16,039.39	20	\$1,116.00	1%	9%	\$0.01	155	157	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	Existing	2,771.64	5	\$1,200.00	1%	10%	\$0.10	31	32	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	Existing	7,156.53	5	\$993.00	25%	65%	\$0.03	130	135	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	Existing	992.21	15	\$66.00	15%	25%	\$0.01	12	12	Hawaii TRM
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	Existing	74.44	15	\$9.00	15%	75%	\$0.01	5	6	DEER
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	Existing	1,733.62	15	\$2,421.00	16%	75%	\$0.15	123	129	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	Existing	5,991.15	20	\$12,501.00	1%	30%	\$0.19	207	220	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	Existing	611.28	13	\$54.02	50%	at stock turnover	\$0.01	51	49	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,485.45	5	\$5,400.00	3%	75%	\$0.43	208	233	AEG study for PN&L
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	8,117.34	20	\$120,000.00	10%	25%	\$0.18	9	9	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,451.74	5	\$5,400.00	6%	75%	\$0.43	12	12	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	612.17	7	\$1,398.00	1%	2%	\$0.25	0	0	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	New	15,998.35	20	\$1,116.00	1%	11%	\$0.01	11	11	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	New	2,793.69	5	\$1,200.00	0%	75%	\$0.10	15	15	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	New	7,116.63	5	\$993.00	25%	65%	\$0.03	8	8	DEER
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	New	986.52	15	\$66.00	15%	25%	\$0.01	1	1	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	New	74.36	15	\$9.00	15%	75%	\$0.01	0	0	DEER
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	New	1,685.07	15	\$2,421.00	1%	75%	\$0.15	9	9	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	New	5,647.90	20	\$12,501.00	1%	30%	\$0.19	12	12	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	New	611.28	13	\$54.02	50%	at stock turnover	\$0.01	5	4	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,358.41	5	\$5,400.00	6%	75%	\$0.43	12	12	AEG study for PN&L
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	14,072.83	23	\$20,838.52	11%	at stock turnover	\$0.18	502	432	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,233.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$821.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	4,152.49	15	\$7,800.00	45%	50%	\$38.91	26	37	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	1,076.93	10	\$1,500.00	15%	35%	\$0.07	190	212	AEG research & analysis
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	4,950.55	15	\$3,572.00	15%	75%	\$0.01	3	20	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	1,808.94	15	\$3,175.00	20%	65%	\$0.06	722	803	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	Existing	3,442.22	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	110.54	18	\$22.00	15%	50%	\$0.03	34	40	BEST Simulation
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	Existing	7,445.13	10	\$6,745.00	18%	75%	\$0.13	1,366	1,622	DEER
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	1,957.13	50	\$25,000.00	15%	25%	\$0.71	163	212	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	1,105.22	45	\$12,627.00	15%	35%	\$0.07	194	218	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	1,776.97	45	\$6,928.00	15%	35%	\$0.12	310	351	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	1,142.74	20	\$3,500.00	15%	50%	\$0.09	350	395	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	-803.60	45	\$7,710.00	15%	35%	\$0.07	-141	-159	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	Existing	5,672.33	15	\$3,572.93	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	1,989.80	3	\$6,100.00	10%	75%	\$0.30	1,098	1,276	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	Existing	11,028.68	23	\$21,380.78	72%	at stock turnover	\$0.20	1,155	1,165	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$29,660.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	1,441.46	3	\$3,175.00	3%	14%	\$0.19	135	184	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Office bldg.	Existing	12,766.70	23	\$5,804.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,233.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$10,268.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	6,824.28	20	\$40,000.00	10%	25%	\$0.13	159	165	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	New	11,641.81	23	\$17,522.96	13%	at stock turnover	\$0.17	261	249	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,233.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$821.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	New	1,327.35	3	\$9,600.00	10%	75%	\$0.60	133	139	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	741.03	10	\$1,500.00	15%	50%	\$0.09	40	42	AEG research & analysis
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	987.70	15	\$3,572.00	15%	75%	\$0.01	0	0	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	New	1,252.39	15	\$3,175.00	20%	65%	\$0.07	88	91	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	New	3,442.22	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Small Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	10,217.24	23	\$14,419.32	12%	at stock turnover	\$0.11	127	127	BEST Simulation
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	486.97	18	\$21.00	15%	35%	\$0.00	15	16	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	New	4,928.84	10	\$6,745.00	18%	75%	\$0.18	60	61	DEER
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	1,295.73	50	\$25,000.00	15%	25%	\$1.06	20	21	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	-81.84	45	\$12,627.00	15%	50%	\$0.32	-4	-5	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	1,187.17	45	\$6,928.00	15%	50%	\$0.14	65	67	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	785.32	20	\$3,500.00	15%	50%	\$0.11	43	44	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	-10.62	45	\$7,710.00	15%	50%	\$0.50	-1	-1	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	New	4,964.01	15	\$3,389.27	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	New	9,048.93	23	\$17,978.95	86%	at stock turnover	\$0.21	301	305	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	New	0.00	15	\$29,660.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	959.84	3	\$3,175.00	3%	14%	\$0.25	16	17	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,233.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$10,268.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	64.95	15	\$3,175.00	20%	65%	\$0.06	59	92	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	178.61	5	\$244.00	15%	25%	\$0.23	35	70	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	44.39	10	\$609.00	33%	60%	\$1.36	23	48	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	Existing	1,030.13	10	\$953.00	15%	30%	\$0.10	311	597	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	568.23	15	-\$33.76	100%	at stock turnover	-\$0.02	5	9	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	724.48	15	\$267.41	100%	at stock turnover	\$0.01	1,449	1,362	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	178.23	15	\$37.85	100%	at stock turnover	\$0.00	462	455	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	42.82	15	\$5.65	100%	at stock turnover	\$0.00	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	59.01	3	\$6,100.00	10%	75%	\$0.30	74	121	6th Plan
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	156.25	6	\$4.99	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	127.17	15	\$90.86	100%	at stock turnover	\$0.05	1,084	661	EIA 2011
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	51.75	3	\$3,175.00	3%	14%	\$0.19	11	26	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	293.92	20	\$40,000.00	10%	25%	\$0.13	13	19	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	50.56	3	\$9,600.00	10%	75%	\$0.60	9	14	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	57.35	15	\$3,175.00	20%	65%	\$0.07	7	11	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	153.50	5	\$244.00	15%	25%	\$0.24	4	7	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	45.04	10	\$609.00	44%	60%	\$1.20	2	3	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	New	905.21	10	\$953.00	15%	30%	\$0.11	39	60	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	568.23	15	-\$33.76	100%	at stock turnover	-\$0.02	1	2	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	724.48	15	\$267.41	100%	at stock turnover	\$0.00	288	272	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	178.23	15	\$37.85	100%	at stock turnover	\$0.00	92	91	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	42.82	15	\$5.65	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	156.25	6	\$4.99	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	127.17	15	\$90.86	100%	at stock turnover	\$0.04	216	116	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	43.91	3	\$3,175.00	3%	14%	\$0.25	1	2	BEST Simulation
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,180.95	15	\$3.90	4%	at stock turnover	\$0.00	38	37	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	426.11	10	\$4.15	4%	at stock turnover	\$0.00	14	12	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	722.38	18	\$17.59	4%	at stock turnover	\$0.00	5	5	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	767.19	10	\$9.33	4%	at stock turnover	\$0.00	16	14	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,180.95	15	\$4.88	5%	at stock turnover	\$0.00	10	10	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	426.11	10	\$5.18	5%	at stock turnover	\$0.00	3	3	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	722.38	18	\$21.99	5%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	767.19	10	\$11.66	5%	at stock turnover	\$0.00	4	3	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	1,970.73	23	\$27,538.56	11%	at stock turnover	\$0.18	60	52	BEST Simulation
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	-4,233.97	15	\$7,800.00	45%	50%	\$38.99	-13	-17	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	1,830.08	10	\$1,500.00	15%	35%	\$0.07	155	166	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	29,477.84	15	\$3,572.00	15%	75%	\$0.01	1,973	1,973	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	3,123.30	15	\$3,175.00	20%	65%	\$0.06	610	637	BEST Simulation
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	Existing	574.08	23	\$25,451.02	10%	at stock turnover	\$0.20	16	16	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	-336.05	18	\$22.00	15%	50%	\$0.03	-51	-55	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	12,168.88	45	\$12,627.00	15%	35%	\$0.07	1,030	1,103	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	2,972.08	45	\$6,928.00	15%	35%	\$0.12	246	269	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	2,331.90	20	\$3,500.00	15%	50%	\$0.09	340	370	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	9,784.84	45	\$7,710.00	15%	35%	\$0.07	842	887	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	3,537.64	3	\$6,100.00	10%	75%	\$0.30	947	1,042	6th Plan
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	Existing	0.00	14	\$44,783.00	3%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	2,562.78	3	\$3,175.00	3%	14%	\$0.19	116	145	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation

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Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	14,027.61	20	\$40,000.00	10%	25%	\$0.13	140	142	AEG research & analysis
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	New	2,836.75	3	\$9,600.00	10%	75%	\$0.60	122	124	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	1,525.46	10	\$1,500.00	15%	50%	\$0.09	35	36	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	29,418.98	15	\$3,572.00	15%	75%	\$0.01	270	270	Developed from RTF
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	New	2,578.04	15	\$3,175.00	20%	65%	\$0.07	77	79	BEST Simulation
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	10,464.78	23	\$21,401.60	12%	at stock turnover	\$0.11	130	130	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	914.70	18	\$21.00	15%	35%	\$0.00	12	12	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	2,945.38	45	\$12,627.00	15%	50%	\$0.32	68	70	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	2,440.47	45	\$6,928.00	15%	50%	\$0.14	57	58	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	1,970.33	20	\$3,500.00	15%	50%	\$0.11	46	47	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	1,108.24	45	\$7,710.00	15%	50%	\$0.50	26	26	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	New	0.00	14	\$44,783.00	6%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	2,090.82	3	\$3,175.00	3%	14%	\$0.25	15	16	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	339.20	15	\$3,175.00	20%	65%	\$0.06	266	482	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	414.53	15	-\$32.83	100%	at stock turnover	-\$0.03	8	13	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	528.52	15	\$260.11	100%	at stock turnover	\$0.01	2,106	1,980	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	2,077.73	5	\$6,392.00	5%	15%	\$0.48	115	288	Illinois TRM
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	Existing	3,299.10	5	\$453.00	15%	50%	\$0.03	708	1,523	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	2,017.33	12	\$4,000.00	3%	25%	\$0.18	755	1,804	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	Existing	302.79	16	\$285.00	1%	3%	\$0.07	10	29	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	2,181.60	10	\$1,182.00	7%	45%	\$0.06	1,039	2,323	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	Existing	227.44	5	\$1,100.00	10%	25%	\$0.63	15	52	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	132.74	15	\$27.93	100%	at stock turnover	\$0.00	9,049	9,335	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	32.77	15	\$5.76	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	322.52	3	\$6,100.00	10%	75%	\$0.30	354	662	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	121.53	6	\$5.55	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	98.91	15	\$100.96	100%	at stock turnover	\$0.06	2,170	1,324	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	280.34	3	\$3,175.00	3%	14%	\$0.19	52	160	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	1,478.71	20	\$40,000.00	10%	25%	\$0.13	62	98	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	247.15	3	\$9,600.00	10%	75%	\$0.60	45	71	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	279.25	15	\$3,175.00	20%	65%	\$0.07	35	56	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	414.53	15	-\$32.83	100%	at stock turnover	-\$0.03	2	3	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	528.52	15	\$260.11	100%	at stock turnover	\$0.01	418	395	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	1,582.41	5	\$6,392.00	5%	15%	\$0.64	15	23	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	New	2,540.23	5	\$453.00	15%	50%	\$0.03	83	133	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	1,544.25	12	\$4,000.00	4%	25%	\$0.23	88	140	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	New	237.78	16	\$285.00	1%	3%	\$0.09	1	2	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	1,652.68	10	\$1,182.00	22%	45%	\$0.08	49	77	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timelocks and Timers	per 10,000 sqft Small Office bldg.	New	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	New	156.61	5	\$1,100.00	10%	25%	\$0.86	2	3	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	132.74	15	\$27.93	100%	at stock turnover	\$0.00	1,806	1,853	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	32.77	15	\$5.76	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	121.53	6	\$5.55	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	98.91	15	\$100.96	100%	at stock turnover	\$0.06	432	233	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	214.64	3	\$3,175.00	3%	14%	\$0.25	7	10	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	76.08	7	\$1,397.00	1%	4%	\$0.19	3	3	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	Existing	1.11	7	\$31.00	1%	3%	\$5.34	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	Existing	54.19	10	\$195.00	1%	3%	\$0.54	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	Existing	378.82	15	\$3,772.00	15%	75%	\$1.19	53	53	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	Existing	141.20	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	Existing	25.34	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	416.18	3	\$3,175.00	3%	14%	\$0.19	70	69	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	86.88	7	\$1,397.00	1%	2%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	New	1.27	7	\$2.00	1%	3%	\$0.30	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	New	380.03	15	\$3,772.00	15%	75%	\$1.19	8	8	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	New	141.20	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	New	25.34	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	411.33	3	\$3,175.00	3%	14%	\$0.25	10	10	BEST Simulation
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,167.04	6	\$31.27	100%	at stock turnover	\$0.00	1,496	1,579	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	Existing	109.36	4	\$265.00	10%	50%	\$0.67	270	303	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	820.40	6	\$20.33	100%	at stock turnover	\$0.01	294	311	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	724.80	6	\$49.01	100%	at stock turnover	\$0.01	104	110	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	321.94	5	\$400.00	10%	25%	\$0.29	300	335	5th Plan
Small Office	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	423.78	6	\$0.64	20%	at stock turnover	\$0.00	60	64	Assumed same as Desktop
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	1,520.45	5	\$11.41	100%	at stock turnover	\$0.00	1,428	1,537	Assumed same as Desktop
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,167.04	6	\$31.27	100%	at stock turnover	\$0.00	274	273	ENERGY STAR Calculator
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	New	120.20	4	\$265.00	10%	50%	\$0.60	40	43	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	820.40	6	\$20.33	100%	at stock turnover	\$0.01	54	54	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	724.80	6	\$49.01	100%	at stock turnover	\$0.01	19	19	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	355.10	5	\$400.00	10%	25%	\$0.26	45	48	5th Plan
Small Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,131.30	6	\$14.46	100%	at stock turnover	\$0.00	14	14	ENERGY STAR Calculator
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,520.45	5	\$11.41	100%	at stock turnover	\$0.00	230	236	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	Existing	295.30	9	\$1.69	5%	at stock turnover	\$0.00	4	4	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	Existing	0.39	9	\$103.00	0%	10%	\$42.05	0	0	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$5,908.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$5,221.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$3,274.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	Existing	681.16	10	\$10.07	5%	at stock turnover	\$0.00	26	23	EIA 2011
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	New	0.00	5	\$1,547.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	New	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	New	295.30	9	\$2.03	6%	at stock turnover	\$0.00	1	1	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	New	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	New	0.39	9	\$103.00	0%	10%	\$42.05	0	0	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	New	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	New	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	New	0.00	15	\$5,908.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	New	0.00	15	\$5,221.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	New	0.00	4	\$3,274.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	New	681.16	10	\$12.08	6%	at stock turnover	\$0.00	7	6	EIA 2011
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	-2.79	15	\$7,800.00	45%	50%	\$38.70	0	0	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	540.49	15	\$3,175.00	20%	65%	\$0.06	201	256	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	297.05	18	\$22.00	15%	50%	\$0.03	88	123	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	618.44	50	\$25,000.00	15%	25%	\$0.71	49	75	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	224.49	45	\$12,627.00	15%	35%	\$0.07	37	47	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	341.98	20	\$3,500.00	15%	50%	\$0.09	97	126	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	62.95	45	\$7,710.00	15%	35%	\$0.07	10	13	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	628.35	3	\$6,100.00	10%	75%	\$0.30	327	430	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	455.18	3	\$3,175.00	3%	14%	\$0.19	40	67	BEST Simulation
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	Existing	163.28	15	\$2,200.00	15%	25%	\$1.44	13	17	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	Existing	1,553.20	18	\$1,700.00	15%	35%	\$0.11	252	327	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	Existing	7,480.57	20	\$7,722.48	100%	at stock turnover	\$0.11	954	964	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	Existing	4,408.48	15	\$1,710.00	13%	25%	\$0.04	433	541	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	1,853.85	20	\$40,000.00	10%	25%	\$0.13	39	40	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	New	378.61	3	\$9,600.00	10%	75%	\$0.60	34	35	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	New	338.02	15	\$3,175.00	20%	65%	\$0.07	21	22	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	279.60	18	\$21.00	15%	35%	\$0.00	8	8	BEST Simulation
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	369.56	50	\$25,000.00	15%	25%	\$1.06	5	5	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	10.59	45	\$12,627.00	15%	50%	\$0.32	1	1	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	0.00	20	\$82.00	15%	50%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	213.34	20	\$3,500.00	15%	50%	\$0.11	10	11	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	16.44	45	\$7,710.00	15%	50%	\$0.50	1	1	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	274.28	3	\$3,175.00	3%	14%	\$0.25	4	4	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	New	97.57	15	\$1,300.00	15%	25%	\$1.34	1	1	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	New	941.70	18	\$1,700.00	15%	35%	\$0.17	26	27	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	New	6,799.55	20	\$7,561.88	100%	at stock turnover	\$0.11	151	153	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	New	2,741.55	15	\$1,710.00	19%	25%	\$0.07	21	22	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	731.72	5	\$1,800.00	3%	75%	\$0.46	239	383	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	1,034.63	7	\$1,397.00	1%	4%	\$0.19	14	22	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	Existing	4,060.68	20	\$1,117.00	1%	10%	\$0.02	162	251	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	752.89	5	\$400.00	1%	10%	\$0.10	32	50	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	Existing	1,992.64	5	\$110.00	25%	65%	\$0.01	139	220	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$115.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	Existing	38.43	15	\$3.00	15%	75%	\$0.01	11	16	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	470.82	15	\$1,397.00	16%	75%	\$0.27	127	201	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	Existing	1,499.14	20	\$12,500.00	1%	30%	\$0.61	190	322	BEST Simulation
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	Existing	6,903.31	14	\$1,052.33	60%	at stock turnover	\$0.02	2,727	2,626	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	702.27	5	\$1,800.00	3%	75%	\$0.46	225	372	AEG study for PN&L
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,212.77	20	\$40,000.00	10%	25%	\$0.13	20	29	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	675.29	5	\$1,800.00	6%	75%	\$0.45	28	40	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	962.05	7	\$1,397.00	1%	2%	\$0.18	0	1	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	New	4,017.46	20	\$1,117.00	1%	12%	\$0.02	25	36	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	New	741.64	5	\$400.00	0%	75%	\$0.10	34	48	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	New	1,946.25	5	\$110.00	25%	65%	\$0.01	18	26	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	New	0.00	15	\$115.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	New	37.71	15	\$3.00	15%	75%	\$0.01	1	2	DEER
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	New	434.67	15	\$1,397.00	1%	75%	\$0.27	19	28	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	New	1,390.71	20	\$12,500.00	1%	30%	\$0.59	24	35	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	New	6,903.31	14	\$1,052.33	60%	at stock turnover	\$0.02	619	603	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	649.86	5	\$1,800.00	6%	75%	\$0.45	27	39	AEG study for PN&L
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	11,175.91	23	\$16,435.78	7%	at stock turnover	\$0.07	164	141	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	Existing	5,994.56	23	\$2,258.11	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,489.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$627.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	3,925.91	15	\$7,800.00	45%	50%	\$0.82	110	132	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	De-stratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	814.96	10	\$1,500.00	15%	35%	\$0.09	97	110	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	3,924.13	15	\$2,381.00	15%	75%	\$0.01	6	44	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	1,374.01	15	\$3,175.00	20%	65%	\$0.07	371	416	BEST Simulation
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	9,849.26	23	\$13,523.48	5%	at stock turnover	\$0.08	144	145	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	137.23	18	\$17.00	15%	50%	\$0.04	29	34	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	Existing	5,897.50	10	\$5,150.00	18%	75%	\$0.12	724	859	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	1,477.46	50	\$25,000.00	15%	25%	\$0.91	83	110	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	1,199.13	45	\$12,627.00	15%	35%	\$0.09	143	161	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	626.06	20	\$82.00	15%	50%	\$0.67	110	128	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	1,262.39	45	\$6,928.00	15%	35%	\$0.15	145	170	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	864.15	20	\$3,500.00	15%	50%	\$0.11	179	203	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	-610.41	45	\$7,710.00	15%	35%	\$0.09	-73	-82	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	1,506.95	3	\$6,100.00	10%	75%	\$0.37	560	659	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	Existing	8,741.80	23	\$16,851.26	70%	at stock turnover	\$0.20	611	617	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$22,647.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	1,088.65	3	\$3,175.00	0%	3%	\$0.23	19	26	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	Existing	10,112.12	23	\$3,416.61	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,489.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$6,845.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	5,703.37	20	\$40,000.00	10%	25%	\$0.16	89	92	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	10,963.10	23	\$14,192.82	9%	at stock turnover	\$0.07	49	42	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	New	5,159.38	23	\$2,002.67	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,489.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$627.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	New	1,178.49	3	\$9,600.00	10%	75%	\$0.71	80	82	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	673.37	15	\$7,800.00	45%	50%	\$20.13	3	4	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	657.88	10	\$1,500.00	15%	50%	\$0.11	24	25	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	776.50	15	\$2,381.00	15%	75%	\$0.01	0	1	Developed from RTF
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	New	1,111.87	15	\$3,175.00	20%	65%	\$0.09	52	54	BEST Simulation
Small Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Retail bldg.	New	2,728.45	15	\$24,112.21	10%	at stock turnover	\$1.08	29	27	PacifiCorp Program Data
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	9,691.69	23	\$11,677.95	7%	at stock turnover	\$0.07	43	44	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	119.44	18	\$15.00	15%	50%	\$0.00	4	5	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	New	4,821.20	10	\$5,150.00	18%	75%	\$0.15	39	39	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	1,150.41	50	\$25,000.00	15%	25%	\$1.21	12	12	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	-102.21	45	\$12,627.00	15%	50%	\$0.34	-4	-4	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	898.33	20	\$82.00	15%	50%	\$0.01	33	34	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	992.27	45	\$6,928.00	15%	50%	\$0.19	36	37	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	697.21	20	\$3,500.00	15%	50%	\$0.14	26	26	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	-9.43	45	\$7,710.00	15%	50%	\$0.69	0	0	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Retail bldg.	New	3,934.68	15	\$2,686.48	4%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	New	8,593.45	23	\$14,551.60	90%	at stock turnover	\$0.18	187	190	BEST Simulation
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$22,647.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	850.11	3	\$3,175.00	0%	3%	\$0.30	3	3	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	New	8,802.05	23	\$3,030.13	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,489.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$6,845.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	78.46	15	\$3,175.00	20%	65%	\$0.07	47	77	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	230.35	5	\$639.00	15%	25%	\$0.46	30	64	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	27.06	10	\$438.00	33%	60%	\$1.63	10	21	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	Existing	1,351.69	10	\$685.00	15%	30%	\$0.06	277	548	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	163.69	15	-\$6.93	100%	at stock turnover	-\$0.02	5	7	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	208.70	15	\$54.87	100%	at stock turnover	\$0.00	1,228	1,142	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	31.22	15	\$6.45	100%	at stock turnover	\$0.01	699	683	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	7.31	15	\$0.69	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	77.72	3	\$6,100.00	10%	75%	\$0.37	66	111	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	36.07	6	\$0.82	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	29.36	15	\$14.94	100%	at stock turnover	\$0.03	361	220	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	67.38	3	\$3,175.00	0%	3%	\$0.23	3	7	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	356.20	20	\$40,000.00	10%	25%	\$0.16	10	15	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	61.40	3	\$9,600.00	10%	75%	\$0.71	7	11	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	64.48	15	\$3,175.00	20%	65%	\$0.09	5	8	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	185.86	5	\$639.00	15%	25%	\$0.54	3	5	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	22.86	10	\$438.00	44%	60%	\$1.78	1	1	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	New	1,112.48	10	\$685.00	15%	30%	\$0.07	31	46	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	163.69	15	-\$6.93	100%	at stock turnover	-\$0.02	1	1	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	208.70	15	\$54.87	100%	at stock turnover	\$0.00	220	206	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	31.22	15	\$6.45	100%	at stock turnover	\$0.01	125	123	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	7.31	15	\$0.69	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	36.07	6	\$0.82	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	29.36	15	\$14.94	100%	at stock turnover	\$0.03	63	34	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	53.69	3	\$3,175.00	0%	3%	\$0.30	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	3,224.29	15	\$3.01	4%	at stock turnover	\$0.00	20	20	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	328.61	10	\$3.20	4%	at stock turnover	\$0.00	7	6	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	557.09	18	\$13.57	4%	at stock turnover	\$0.00	3	3	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	591.65	10	\$7.19	4%	at stock turnover	\$0.00	9	8	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	3,224.29	15	\$4.51	5%	at stock turnover	\$0.00	6	6	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	328.61	10	\$4.79	5%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	557.09	18	\$20.35	5%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	591.65	10	\$10.79	5%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	3,140.73	23	\$9,830.68	7%	at stock turnover	\$0.07	40	35	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	-2,770.44	15	\$7,800.00	45%	50%	\$0.83	-29	-33	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,351.20	10	\$1,500.00	15%	35%	\$0.09	59	65	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	22,049.48	15	\$2,381.00	15%	75%	\$0.01	931	931	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	2,345.99	15	\$3,175.00	20%	65%	\$0.07	239	253	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	2,768.84	23	\$9,477.77	5%	at stock turnover	\$0.08	35	35	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	-175.67	18	\$17.00	15%	50%	\$0.04	-14	-15	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	9,165.58	45	\$12,627.00	15%	35%	\$0.09	405	439	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-522.77	20	\$82.00	15%	50%	\$0.67	-34	-38	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	2,236.91	45	\$6,928.00	15%	35%	\$0.15	97	107	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,755.02	20	\$3,500.00	15%	50%	\$0.11	133	147	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	7,350.12	45	\$7,710.00	15%	35%	\$0.09	330	352	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	2,670.07	3	\$6,100.00	10%	75%	\$0.37	373	416	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	Existing	0.00	14	\$18,973.00	3%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	1,928.90	3	\$3,175.00	0%	3%	\$0.23	12	16	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	10,257.28	20	\$40,000.00	10%	25%	\$0.16	50	50	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	2,298.99	23	\$8,885.87	9%	at stock turnover	\$0.07	9	8	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	New	2,070.54	3	\$9,600.00	10%	75%	\$0.71	44	44	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	-691.91	15	\$7,800.00	45%	50%	\$20.16	-1	-1	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	1,115.45	10	\$1,500.00	15%	50%	\$0.11	13	13	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	21,952.39	15	\$2,381.00	15%	75%	\$0.01	115	115	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	New	1,885.10	15	\$3,175.00	20%	65%	\$0.09	28	28	BEST Simulation
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	1,930.76	23	\$8,184.35	7%	at stock turnover	\$0.07	8	8	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	556.35	18	\$15.00	15%	50%	\$0.00	6	6	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	2,799.66	45	\$12,627.00	15%	50%	\$0.34	32	32	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	303.39	20	\$82.00	15%	50%	\$0.01	3	3	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	1,784.54	45	\$6,928.00	15%	50%	\$0.19	20	20	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	1,440.74	20	\$3,500.00	15%	50%	\$0.14	16	16	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	808.90	45	\$7,710.00	15%	50%	\$0.69	9	9	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	New	0.00	14	\$18,973.00	6%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	1,528.87	3	\$3,175.00	0%	3%	\$0.30	1	1	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	468.63	15	\$3,175.00	20%	65%	\$0.07	277	462	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	364.15	15	-\$15.41	100%	at stock turnover	-\$0.02	13	18	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	464.28	15	\$122.07	100%	at stock turnover	\$0.00	3,424	3,183	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	2,392.40	5	\$9,533.00	5%	15%	\$0.63	102	222	Illinois TRM
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	Existing	3,805.64	5	\$457.00	15%	50%	\$0.02	625	1,174	Illinois TRM
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	2,788.28	12	\$4,000.00	3%	25%	\$0.13	786	1,682	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	Existing	422.05	16	\$288.00	1%	3%	\$0.05	11	27	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	3,020.08	10	\$1,193.00	7%	45%	\$0.04	1,083	2,168	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$1,331.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	Existing	380.18	5	\$1,100.00	10%	25%	\$0.38	18	61	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	95.82	15	\$19.78	100%	at stock turnover	\$0.01	8,927	8,723	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	22.42	15	\$2.11	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	446.16	3	\$6,100.00	10%	75%	\$0.37	370	635	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	104.58	6	\$2.38	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	85.12	15	\$43.32	100%	at stock turnover	\$0.03	2,404	1,463	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	387.18	3	\$3,175.00	0%	3%	\$0.23	15	40	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	2,169.33	20	\$40,000.00	10%	25%	\$0.16	58	89	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	374.87	3	\$9,600.00	10%	75%	\$0.71	43	66	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	407.77	15	\$3,175.00	20%	65%	\$0.09	33	50	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	364.15	15	-\$15.41	100%	at stock turnover	-\$0.02	3	4	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	464.28	15	\$122.07	100%	at stock turnover	\$0.00	614	574	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	2,109.71	5	\$9,533.00	5%	15%	\$0.69	12	19	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	New	3,311.64	5	\$457.00	15%	50%	\$0.02	69	106	Illinois TRM
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	2,413.51	12	\$4,000.00	4%	25%	\$0.15	88	135	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	New	367.19	16	\$288.00	1%	3%	\$0.06	1	2	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	2,552.06	10	\$1,193.00	22%	45%	\$0.05	48	74	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Lighting - Timelocks and Timers	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$1,331.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	New	252.67	5	\$1,100.00	10%	25%	\$0.55	2	3	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	95.82	15	\$19.78	100%	at stock turnover	\$0.01	1,596	1,568	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	22.42	15	\$2.11	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	104.58	6	\$2.38	100%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	85.12	15	\$43.32	100%	at stock turnover	\$0.03	422	228	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	327.03	3	\$3,175.00	0%	3%	\$0.30	2	3	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	85.40	7	\$932.00	1%	8%	\$0.39	5	5	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	Existing	1.25	7	\$20.00	1%	3%	\$3.07	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	Existing	61.08	10	\$130.00	1%	3%	\$0.32	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	Existing	262.57	15	\$1,395.00	15%	75%	\$0.64	25	25	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	141.20	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	Existing	25.34	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	287.69	3	\$3,175.00	0%	3%	\$0.23	9	9	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	98.57	7	\$932.00	1%	4%	\$0.39	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	New	1.44	7	\$1.00	1%	3%	\$0.13	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	New	0.00	13	\$0.00	26%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	New	263.24	15	\$1,395.00	15%	75%	\$0.63	4	4	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	New	141.20	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	New	25.34	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	281.01	3	\$3,175.00	0%	3%	\$0.30	1	1	BEST Simulation
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	256.75	6	\$1.93	100%	at stock turnover	\$0.00	64	67	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	Existing	26.61	4	\$265.00	10%	50%	\$2.70	52	57	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	50.55	6	\$1.25	100%	at stock turnover	\$0.01	13	13	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	44.66	6	\$3.02	100%	at stock turnover	\$0.01	4	5	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	78.96	5	\$400.00	10%	25%	\$1.16	59	64	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	104.44	6	\$0.78	100%	at stock turnover	\$0.00	47	50	Assumed same as Desktop
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	55.76	6	\$0.71	100%	at stock turnover	\$0.00	3	3	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	374.73	5	\$2.81	100%	at stock turnover	\$0.00	244	263	Assumed same as Desktop
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	256.75	6	\$1.93	100%	at stock turnover	\$0.00	11	11	ENERGY STAR Calculator
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	New	28.90	4	\$265.00	10%	50%	\$2.44	7	7	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	50.55	6	\$1.25	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	44.66	6	\$3.02	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	86.51	5	\$400.00	10%	25%	\$1.05	8	8	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	104.44	6	\$0.78	100%	at stock turnover	\$0.00	8	8	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	55.76	6	\$0.71	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	374.73	5	\$2.81	100%	at stock turnover	\$0.00	35	36	Assumed same as Desktop
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,754.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	Existing	204.84	9	\$1.17	5%	at stock turnover	\$0.00	2	2	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	Existing	356.22	8	\$1,695.00	0%	25%	\$0.83	3	3	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	Existing	0.13	9	\$69.00	0%	25%	\$81.21	0	0	PacificCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	Existing	55.45	15	\$4,128.00	0%	25%	\$8.20	2	3	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	Existing	114.04	15	\$3,481.00	0%	25%	\$3.43	5	6	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,070.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	Existing	472.50	10	\$6.98	5%	at stock turnover	\$0.00	13	11	EIA 2011
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,031.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	New	204.84	9	\$1.76	8%	at stock turnover	\$0.00	0	0	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	New	411.03	8	\$1,695.00	0%	25%	\$0.72	1	1	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	New	0.13	9	\$69.00	0%	25%	\$81.21	0	0	PacificCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	New	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	New	54.06	15	\$4,128.00	0%	25%	\$8.48	0	0	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	New	111.09	15	\$3,481.00	0%	25%	\$3.55	1	1	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,070.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	New	472.50	10	\$10.48	8%	at stock turnover	\$0.00	3	3	EIA 2011
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	-23.32	15	\$7,800.00	45%	50%	\$0.82	-1	-1	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	446.69	15	\$3,175.00	20%	65%	\$0.07	122	147	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	86.24	18	\$17.00	15%	50%	\$0.04	18	24	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	511.25	50	\$25,000.00	15%	25%	\$0.91	29	42	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	376.23	45	\$12,627.00	15%	35%	\$0.09	45	55	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-10.67	20	\$82.00	15%	50%	\$0.64	-2	-2	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	282.11	20	\$3,500.00	15%	50%	\$0.11	59	72	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	52.01	45	\$7,710.00	15%	35%	\$0.09	6	8	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	519.58	3	\$6,100.00	10%	75%	\$0.37	198	246	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	375.35	3	\$3,175.00	0%	3%	\$0.23	7	10	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	Existing	134.97	15	\$2,200.00	15%	25%	\$1.75	8	10	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	Existing	1,281.13	18	\$1,700.00	15%	35%	\$0.13	152	187	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	Existing	4,729.25	20	\$4,398.64	100%	at stock turnover	\$0.10	539	545	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	Existing	3,652.68	15	\$725.00	13%	25%	\$0.02	264	311	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,611.01	20	\$40,000.00	10%	25%	\$0.16	21	22	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	New	329.50	3	\$9,600.00	10%	75%	\$0.71	19	19	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	67.40	15	\$7,800.00	45%	50%	\$20.13	0	0	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	New	293.74	15	\$3,175.00	20%	65%	\$0.09	12	12	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	69.78	18	\$15.00	15%	50%	\$0.00	2	2	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	321.62	50	\$25,000.00	15%	25%	\$1.21	3	3	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	25.93	45	\$12,627.00	15%	50%	\$0.34	1	1	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	76.51	20	\$82.00	15%	50%	\$0.01	2	2	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	185.39	20	\$3,500.00	15%	50%	\$0.14	6	6	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	14.31	45	\$7,710.00	15%	50%	\$0.69	0	0	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	238.35	3	\$3,175.00	0%	3%	\$0.30	1	1	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	New	84.92	15	\$1,300.00	15%	25%	\$1.55	1	1	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	New	818.35	18	\$1,700.00	15%	35%	\$0.20	14	15	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	New	4,460.75	20	\$4,104.24	100%	at stock turnover	\$0.10	73	74	BEST Simulation
Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	New	2,382.43	15	\$725.00	19%	25%	\$0.03	12	12	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	555.15	5	\$1,800.00	3%	75%	\$0.59	128	209	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	286.02	7	\$932.00	1%	8%	\$0.39	6	10	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	Existing	3,380.21	20	\$745.00	1%	5%	\$0.02	53	81	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	592.36	5	\$400.00	1%	10%	\$0.13	18	28	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	Existing	1,527.60	5	\$221.00	25%	65%	\$0.03	76	121	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

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Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$99.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	Existing	15.85	15	\$3.00	15%	75%	\$0.02	3	5	DEER
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	370.48	15	\$1,141.00	16%	75%	\$0.29	72	112	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	Existing	1,280.01	20	\$8,333.00	1%	30%	\$0.52	120	191	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	Existing	5,324.07	14	\$873.69	62%	at stock turnover	\$0.02	1,536	1,479	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	532.88	5	\$1,800.00	3%	75%	\$0.59	121	203	AEG study for PN&L
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,675.58	20	\$40,000.00	10%	25%	\$0.16	10	14	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	474.78	5	\$1,800.00	6%	75%	\$0.60	13	18	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	254.76	7	\$932.00	1%	4%	\$0.39	0	0	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	New	3,173.07	20	\$745.00	1%	7%	\$0.02	8	11	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	New	561.62	5	\$400.00	0%	75%	\$0.13	17	24	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	New	1,429.86	5	\$221.00	25%	65%	\$0.03	9	12	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$99.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	New	15.17	15	\$3.00	15%	75%	\$0.02	0	1	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	329.92	15	\$1,141.00	1%	75%	\$0.30	10	14	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	New	1,136.31	20	\$8,333.00	1%	30%	\$0.53	13	18	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	New	5,324.07	14	\$873.69	62%	at stock turnover	\$0.02	290	282	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	493.33	5	\$1,800.00	6%	75%	\$0.60	13	19	AEG study for PN&L
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	Existing	11,257.94	23	\$14,932.15	2%	at stock turnover	\$0.96	18	18	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	Existing	36,442.32	23	\$13,727.55	3%	at stock turnover	\$0.04	77	77	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	11,589.31	10	\$810.00	15%	75%	\$0.01	23	26	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	3,356.19	15	\$980.00	15%	75%	\$0.03	7	8	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	Existing	735.10	15	\$2,370.00	15%	75%	\$0.29	1	2	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	Existing	27,998.39	12	\$45,000.00	15%	75%	\$0.19	278	342	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	5,284.91	10	\$15,000.00	15%	35%	\$0.07	18	20	AEG research & analysis
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	46,124.04	15	\$3,570.00	15%	25%	\$0.00	7	8	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	8,894.55	15	\$31,750.00	20%	65%	\$0.07	69	75	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	Existing	16,248.13	15	\$2,189.29	0%	at stock turnover	\$0.02	2	2	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Warehouse bldg.	Existing	1,660.33	23	\$29.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	1,715.20	18	\$60.00	15%	25%	\$0.00	3	3	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	Existing	34,224.12	10	\$19,490.00	18%	75%	\$0.08	119	141	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	9,062.46	50	\$250,000.00	15%	25%	\$1.67	14	19	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	23,598.61	45	\$126,270.00	15%	35%	\$0.06	82	89	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	5,298.55	20	\$820.00	15%	35%	\$0.01	19	20	BEST Simulation
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	8,269.90	45	\$69,280.00	15%	35%	\$0.12	28	31	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	5,318.04	20	\$35,000.00	15%	50%	\$0.09	31	35	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	-4,027.91	45	\$77,100.00	15%	35%	\$0.05	-14	-15	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	Existing	26,774.74	15	\$16,865.10	1%	at stock turnover	\$0.07	40	37	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	9,212.62	3	\$61,000.00	10%	75%	\$0.35	97	113	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	Existing	52,060.56	23	\$72,821.37	9%	at stock turnover	\$0.15	74	75	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$85,700.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	6,669.13	3	\$31,750.00	3%	11%	\$0.23	9	12	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	Existing	59,565.48	23	\$20,125.58	0%	at stock turnover	\$0.04	14	14	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	17,193.65	10	\$810.00	15%	75%	\$0.01	4	4	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	22,557.25	4	\$810.00	15%	75%	\$0.01	5	6	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	4,480.06	15	\$980.00	15%	75%	\$0.02	1	1	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	Existing	682.45	15	\$4,490.00	15%	75%	\$0.54	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	37,991.94	20	\$400,000.00	10%	15%	\$0.14	6	6	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	New	10,943.33	23	\$12,808.64	2%	at stock turnover	\$0.96	5	6	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	New	31,365.08	23	\$12,174.71	3%	at stock turnover	\$0.04	21	21	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	17,886.91	10	\$810.00	15%	75%	\$0.01	6	6	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	2,897.22	15	\$980.00	15%	75%	\$0.03	1	1	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$2,370.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	New	7,552.39	3	\$96,000.00	10%	75%	\$0.59	15	15	6th Plan
Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	New	22,868.83	12	\$45,000.00	15%	75%	\$0.22	41	42	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	4,389.75	10	\$15,000.00	15%	50%	\$0.08	5	5	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	37,412.26	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	New	7,418.97	15	\$31,750.00	20%	65%	\$0.07	10	10	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	New	16,248.13	15	\$2,189.29	0%	at stock turnover	\$0.02	1	1	PacificCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Warehouse bldg.	New	1,614.58	23	\$25.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	2,665.64	18	\$50.00	15%	25%	\$0.00	1	1	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	New	27,599.89	10	\$19,490.00	18%	75%	\$0.09	6	6	DEER
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	7,372.92	50	\$250,000.00	15%	25%	\$2.08	2	2	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	-167.28	45	\$126,270.00	15%	50%	\$0.09	0	0	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	7,021.39	20	\$820.00	15%	25%	\$0.01	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	6,857.80	45	\$69,280.00	15%	50%	\$0.13	7	7	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	4,419.32	20	\$35,000.00	15%	50%	\$0.10	5	5	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	-60.41	45	\$77,100.00	15%	50%	\$0.37	0	0	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	New	23,431.31	15	\$15,998.16	1%	at stock turnover	\$0.08	8	8	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	New	50,607.66	23	\$62,465.40	9%	at stock turnover	\$0.13	23	23	BEST Simulation
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$85,700.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	5,461.28	3	\$31,750.00	3%	11%	\$0.26	1	1	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	New	51,848.48	23	\$17,849.00	0%	at stock turnover	\$0.04	4	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	12,772.39	10	\$810.00	15%	75%	\$0.01	0	0	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	16,884.47	4	\$810.00	15%	75%	\$0.01	1	1	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	2,416.31	15	\$980.00	15%	75%	\$0.04	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$4,490.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	468.69	15	\$31,750.00	20%	65%	\$0.07	44	73	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	1,295.68	5	\$650.00	15%	25%	\$0.08	26	57	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	277.59	10	\$3,430.00	33%	60%	\$1.20	15	34	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	Existing	7,435.46	10	\$5,360.00	15%	30%	\$0.08	233	480	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	769.78	15	-\$39.63	100%	at stock turnover	-\$0.02	3	4	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	981.46	15	\$313.96	100%	at stock turnover	\$0.00	725	673	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	67.74	15	\$12.47	100%	at stock turnover	\$0.01	622	613	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.28	15	\$1.86	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	426.99	3	\$61,000.00	10%	75%	\$0.34	56	95	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	126.60	6	\$3.50	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	103.03	15	\$63.80	100%	at stock turnover	\$0.04	870	530	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	370.77	3	\$31,750.00	3%	11%	\$0.23	6	16	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	1,990.81	20	\$400,000.00	10%	15%	\$0.14	4	6	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	351.79	3	\$96,000.00	10%	75%	\$0.59	8	13	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	391.99	15	\$31,750.00	20%	65%	\$0.07	7	10	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	1,076.17	5	\$650.00	15%	25%	\$0.09	4	6	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	236.93	10	\$3,430.00	44%	60%	\$1.32	1	2	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	New	6,186.77	10	\$5,360.00	15%	30%	\$0.09	34	53	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	769.78	15	-\$39.63	100%	at stock turnover	-\$0.02	1	1	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	981.46	15	\$313.96	100%	at stock turnover	\$0.00	173	162	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	67.74	15	\$12.47	100%	at stock turnover	\$0.00	148	147	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.28	15	\$1.86	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	126.60	6	\$3.50	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	103.03	15	\$63.80	100%	at stock turnover	\$0.04	207	112	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	305.29	3	\$31,750.00	3%	11%	\$0.26	1	1	BEST Simulation
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	7,426.01	15	\$4.31	2%	at stock turnover	\$0.00	5	5	Illinois TRM
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	756.83	10	\$4.58	2%	at stock turnover	\$0.00	2	1	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,283.06	18	\$19.42	2%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,362.65	10	\$10.30	2%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	7,426.01	15	\$5.17	3%	at stock turnover	\$0.00	1	1	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	756.83	10	\$5.03	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,283.06	18	\$21.36	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,362.65	10	\$12.36	3%	at stock turnover	\$0.00	1	0	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	Existing	5,518.27	23	\$155,382.73	2%	at stock turnover	\$0.96	9	9	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	23,402.51	10	\$15,000.00	15%	35%	\$0.07	99	104	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	317,713.80	15	\$3,570.00	15%	25%	\$0.00	525	525	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	39,394.02	15	\$31,750.00	20%	65%	\$0.07	380	394	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Warehouse bldg.	Existing	2,015.69	23	\$377.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	5,844.34	18	\$60.00	15%	25%	\$0.00	13	13	BEST Simulation
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	160,413.90	45	\$126,270.00	15%	35%	\$0.06	698	713	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	2,581.12	20	\$820.00	15%	35%	\$0.01	11	11	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	38,668.95	45	\$69,280.00	15%	35%	\$0.12	163	172	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	30,343.23	20	\$35,000.00	15%	50%	\$0.09	225	236	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	128,691.44	45	\$77,100.00	15%	35%	\$0.05	568	572	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	46,071.09	3	\$61,000.00	10%	75%	\$0.35	627	666	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	Existing	0.00	14	\$78,530.00	3%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	33,340.89	3	\$31,750.00	3%	11%	\$0.23	56	63	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	202,563.23	20	\$400,000.00	10%	15%	\$0.14	37	37	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	New	5,840.29	23	\$154,759.07	2%	at stock turnover	\$0.96	3	3	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	New	42,726.24	3	\$96,000.00	10%	75%	\$0.59	101	101	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	23,020.07	10	\$15,000.00	15%	50%	\$0.08	29	29	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	317,744.13	15	\$3,570.00	15%	25%	\$0.00	86	86	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	New	38,906.79	15	\$31,750.00	20%	65%	\$0.07	64	64	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Warehouse bldg.	New	1,615.31	23	\$324.06	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	4,734.92	18	\$50.00	15%	25%	\$0.00	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	115,310.53	45	\$126,270.00	15%	50%	\$0.09	147	147	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	3,344.02	20	\$820.00	15%	25%	\$0.01	1	1	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	36,565.41	45	\$69,280.00	15%	50%	\$0.13	47	47	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	28,762.51	20	\$35,000.00	15%	50%	\$0.10	37	37	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	16,692.37	45	\$77,100.00	15%	50%	\$0.37	21	21	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	New	0.00	14	\$78,530.00	6%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	31,055.50	3	\$31,750.00	3%	11%	\$0.26	9	9	BEST Simulation
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	2,219.56	15	\$31,750.00	20%	65%	\$0.07	196	344	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,127.54	15	-\$82.93	100%	at stock turnover	-\$0.03	16	22	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,437.60	15	\$656.97	100%	at stock turnover	\$0.01	4,376	4,056	EIA 2011
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	7,801.93	5	\$15,880.00	5%	15%	\$0.32	50	116	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	Existing	12,251.43	5	\$2,600.00	15%	50%	\$0.04	299	607	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	13,172.14	12	\$40,000.00	3%	25%	\$0.28	555	1,271	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	Existing	1,998.90	16	\$1,640.00	1%	3%	\$0.06	8	20	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	14,292.00	10	\$6,790.00	7%	45%	\$0.05	767	1,642	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$7,360.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	Existing	849.50	5	\$11,000.00	10%	25%	\$1.65	5	22	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	81.24	15	\$17.80	100%	at stock turnover	\$0.00	4,047	3,990	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	19.52	15	\$2.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	2,105.63	3	\$61,000.00	10%	75%	\$0.34	260	471	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	151.73	6	\$6.00	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	123.49	15	\$109.24	100%	at stock turnover	\$0.06	752	458	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	1,906.34	3	\$31,750.00	3%	11%	\$0.23	30	82	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	9,643.97	20	\$400,000.00	10%	15%	\$0.14	18	28	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	1,634.44	3	\$96,000.00	10%	75%	\$0.59	40	61	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	1,746.80	15	\$31,750.00	20%	65%	\$0.07	30	45	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,127.54	15	-\$82.93	100%	at stock turnover	-\$0.03	4	6	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,437.60	15	\$656.97	100%	at stock turnover	\$0.00	1,044	975	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	6,438.10	5	\$15,880.00	5%	15%	\$0.39	8	12	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	New	9,950.49	5	\$2,600.00	15%	50%	\$0.05	43	67	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	10,224.23	12	\$40,000.00	4%	25%	\$0.36	80	120	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	New	1,550.77	16	\$1,640.00	1%	3%	\$0.08	1	2	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	10,927.93	10	\$6,790.00	22%	45%	\$0.07	44	66	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$7,360.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	New	505.26	5	\$11,000.00	10%	25%	\$2.72	1	1	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	81.24	15	\$17.80	100%	at stock turnover	\$0.00	965	955	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	19.52	15	\$2.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	151.73	6	\$6.00	100%	at stock turnover	\$0.00	0	0	EIA 2011

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Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	123.49	15	\$109.24	100%	at stock turnover	\$0.05	179	97	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	1,478.78	3	\$31,750.00	3%	11%	\$0.26	4	7	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	303.40	7	\$1,400.00	1%	4%	\$0.45	1	1	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	Existing	4.44	7	\$30.00	1%	3%	\$1.29	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	Existing	217.58	10	\$190.00	1%	3%	\$0.13	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	Existing	0.00	13	\$0.00	50%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	Existing	2,122.94	15	\$4,110.00	15%	75%	\$0.23	73	73	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	1,412.00	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	Existing	253.35	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	1,698.31	3	\$31,750.00	3%	11%	\$0.23	27	26	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	356.23	7	\$1,400.00	1%	2%	\$0.41	0	0	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	New	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	New	2,133.64	15	\$4,110.00	15%	75%	\$0.23	14	14	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	New	1,412.00	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	New	253.35	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	1,624.22	3	\$31,750.00	3%	11%	\$0.26	5	4	BEST Simulation
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	2,734.10	6	\$20.51	100%	at stock turnover	\$0.00	107	113	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	Existing	955.03	4	\$2,650.00	10%	50%	\$0.73	273	309	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	430.63	6	\$10.67	100%	at stock turnover	\$0.01	17	18	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	475.56	6	\$32.15	100%	at stock turnover	\$0.01	7	8	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	2,936.78	5	\$4,000.00	10%	25%	\$0.31	331	357	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,112.21	6	\$6.43	77%	at stock turnover	\$0.00	61	65	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	593.82	6	\$7.59	100%	at stock turnover	\$0.00	5	6	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	3,990.42	5	\$26.65	89%	at stock turnover	\$0.00	382	410	Assumed same as Desktop
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	2,734.10	6	\$20.51	100%	at stock turnover	\$0.00	24	23	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	New	1,050.62	4	\$2,650.00	10%	50%	\$0.63	51	54	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	430.63	6	\$10.67	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	475.56	6	\$32.15	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	3,343.55	5	\$4,000.00	10%	25%	\$0.27	61	65	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,112.21	6	\$7.07	85%	at stock turnover	\$0.00	14	14	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	593.82	6	\$7.59	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	3,990.42	5	\$29.94	100%	at stock turnover	\$0.00	79	81	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	Existing	3,357.99	9	\$38.14	10%	at stock turnover	\$0.00	39	36	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	Existing	4.47	9	\$100.00	0%	10%	\$3.59	0	0	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$17,280.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$5,220.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	Existing	7,745.81	10	\$226.75	10%	at stock turnover	\$0.01	63	55	EIA 2011
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	New	3,357.99	9	\$45.77	12%	at stock turnover	\$0.00	10	9	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	New	4.47	9	\$100.00	0%	10%	\$3.59	0	0	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$17,280.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$5,220.00	0%	0%	\$10.00	0	0	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	New	7,745.81	10	\$272.10	12%	at stock turnover	\$0.01	20	19	EIA 2011
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	1,022.44	15	\$31,750.00	20%	65%	\$0.07	39	53	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	570.52	18	\$60.00	15%	25%	\$0.00	5	7	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	1,174.55	50	\$250,000.00	15%	25%	\$1.67	9	16	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	2,693.35	45	\$126,270.00	15%	35%	\$0.06	46	62	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	-11.39	20	\$820.00	15%	35%	\$0.01	0	0	BEST Simulation
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	648.46	20	\$35,000.00	15%	50%	\$0.09	19	26	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	121.52	45	\$77,100.00	15%	35%	\$0.05	2	3	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	1,207.09	3	\$61,000.00	10%	75%	\$0.35	65	90	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	873.52	3	\$31,750.00	3%	11%	\$0.23	6	10	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	Existing	310.12	15	\$22,000.00	15%	75%	\$7.17	15	21	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	Existing	2,891.56	18	\$17,000.00	15%	35%	\$0.55	47	66	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	Existing	14,806.10	20	\$12,355.64	100%	at stock turnover	\$0.09	244	246	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	Existing	8,801.97	15	\$3,000.00	13%	50%	\$0.04	297	370	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	3,323.37	20	\$400,000.00	10%	15%	\$0.14	3	3	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	New	704.15	3	\$96,000.00	10%	75%	\$0.59	8	9	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	New	606.10	15	\$31,750.00	20%	65%	\$0.07	5	5	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	508.74	18	\$50.00	15%	25%	\$0.00	1	1	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	675.07	50	\$250,000.00	15%	25%	\$2.08	1	1	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	16.23	45	\$126,270.00	15%	50%	\$0.09	0	0	BEST Simulation
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	323.22	20	\$820.00	15%	25%	\$0.01	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	382.44	20	\$35,000.00	15%	50%	\$0.10	2	3	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	30.58	45	\$77,100.00	15%	50%	\$0.37	0	0	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	509.53	3	\$31,750.00	3%	11%	\$0.26	1	1	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	New	178.24	15	\$13,000.00	15%	75%	\$7.11	2	2	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	New	1,672.52	18	\$17,000.00	15%	35%	\$0.92	6	6	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	New	12,814.26	20	\$11,280.14	100%	at stock turnover	\$0.09	28	29	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	New	5,243.43	15	\$3,000.00	19%	50%	\$0.07	29	30	BEST Simulation
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,175.06	5	\$18,000.00	3%	75%	\$1.66	131	145	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	254.49	7	\$1,400.00	1%	4%	\$0.45	1	1	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,283.10	5	\$4,000.00	1%	10%	\$0.37	18	19	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	Existing	6,338.65	5	\$1,320.00	25%	65%	\$0.05	83	84	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	Existing	818.17	15	\$1,120.00	15%	75%	\$0.15	43	44	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	Existing	99.14	15	\$30.00	15%	75%	\$0.04	5	5	DEER
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	1,467.54	15	\$4,420.00	16%	75%	\$0.32	74	79	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	Existing	5,390.25	20	\$12,500.00	1%	30%	\$0.22	135	140	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	Existing	527.48	13	\$25.82	77%	at stock turnover	\$0.01	32	30	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,270.42	5	\$18,000.00	3%	75%	\$1.66	139	150	AEG study for PN&L
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	7,721.12	20	\$400,000.00	10%	15%	\$0.14	6	6	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,107.95	5	\$18,000.00	6%	75%	\$1.67	21	21	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	246.74	7	\$1,400.00	1%	2%	\$0.41	0	0	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,286.21	5	\$4,000.00	0%	75%	\$0.37	24	25	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	New	6,322.65	5	\$1,320.00	25%	65%	\$0.05	14	14	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	New	820.13	15	\$1,120.00	15%	75%	\$0.15	7	7	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	New	99.34	15	\$30.00	15%	75%	\$0.04	1	1	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	1,475.37	15	\$4,420.00	1%	75%	\$0.32	16	16	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	New	5,407.02	20	\$12,500.00	1%	30%	\$0.22	22	23	BEST Simulation
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	New	527.48	13	\$25.82	77%	at stock turnover	\$0.01	8	8	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,191.57	5	\$18,000.00	6%	75%	\$1.67	22	22	AEG study for PN&L
Warehouse, Controlled Atm.	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,487.05	23	\$11,256.93	2%	at stock turnover	\$0.99	8	8	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	27,472.84	23	\$10,348.82	13%	at stock turnover	\$0.04	210	212	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,745.79	10	\$810.00	15%	75%	\$0.01	64	71	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,521.45	15	\$980.00	15%	75%	\$0.04	18	21	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	590.44	15	\$2,370.00	15%	75%	\$0.39	4	5	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse, Controlled Atm.	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Warehouse, Controlled Atm.	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,843.92	10	\$15,000.00	15%	35%	\$0.09	24	26	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	34,792.70	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,469.18	15	\$31,750.00	20%	65%	\$0.08	90	100	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,249.01	15	\$1,144.11	0%	at stock turnover	\$0.01	1	1	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,251.68	23	\$22.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,260.68	18	\$60.00	15%	50%	\$0.00	14	16	BEST Simulation
Warehouse, Controlled Atm.	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	25,297.13	10	\$19,490.00	18%	75%	\$0.10	192	229	DEER
Warehouse, Controlled Atm.	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,952.13	50	\$250,000.00	15%	25%	\$1.72	20	26	6th Plan
Warehouse, Controlled Atm.	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	17,163.18	45	\$126,270.00	15%	35%	\$0.07	108	117	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,849.07	20	\$820.00	15%	50%	\$0.01	42	46	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,936.21	45	\$69,280.00	15%	35%	\$0.15	35	41	BPA

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,817.23	20	\$35,000.00	15%	50%	\$0.11	40	46	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-2,929.50	45	\$77,100.00	15%	35%	\$0.07	-18	-20	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	20,184.73	15	\$12,714.13	1%	at stock turnover	\$0.07	18	17	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,068.67	3	\$61,000.00	10%	75%	\$0.42	136	157	6th Plan
Warehouse, Controlled Atm.	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	39,247.00	23	\$54,898.00	17%	at stock turnover	\$0.15	92	93	BEST Simulation
Warehouse, Controlled Atm.	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$85,700.00	15%	75%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,119.08	3	\$31,750.00	3%	11%	\$0.25	12	17	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	44,904.75	23	\$15,172.11	1%	at stock turnover	\$0.04	38	38	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,942.14	10	\$810.00	15%	75%	\$0.01	10	12	DEER
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16,979.64	4	\$810.00	15%	75%	\$0.01	13	16	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,366.11	15	\$980.00	15%	75%	\$0.03	2	3	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	547.18	15	\$4,490.00	15%	75%	\$0.71	0	1	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	26,365.24	20	\$400,000.00	10%	15%	\$0.17	7	7	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,249.87	23	\$9,656.08	2%	at stock turnover	\$0.99	2	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	New	23,645.25	23	\$9,178.17	13%	at stock turnover	\$0.04	58	58	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,447.81	10	\$810.00	15%	75%	\$0.01	16	17	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,162.48	15	\$980.00	15%	75%	\$0.05	3	3	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$2,370.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,590.15	3	\$96,000.00	10%	75%	\$0.72	20	20	6th Plan
Warehouse, Controlled Atm.	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse, Controlled Atm.	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,086.59	10	\$15,000.00	15%	50%	\$0.10	6	6	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	28,127.30	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,216.40	15	\$31,750.00	20%	65%	\$0.09	13	13	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	New	12,249.01	15	\$1,144.11	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data
Warehouse, Controlled Atm.	Cooling	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,217.19	23	\$18.87	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,915.43	18	\$50.00	15%	50%	\$0.00	4	4	BEST Simulation
Warehouse, Controlled Atm.	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	19,897.93	10	\$19,490.00	18%	75%	\$0.13	10	10	DEER
Warehouse, Controlled Atm.	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,457.16	50	\$250,000.00	15%	25%	\$2.34	3	3	6th Plan
Warehouse, Controlled Atm.	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-117.62	45	\$126,270.00	15%	50%	\$0.12	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,993.09	20	\$820.00	15%	50%	\$0.01	10	10	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,758.95	45	\$69,280.00	15%	50%	\$0.16	9	9	BPA
Warehouse, Controlled Atm.	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,271.95	20	\$35,000.00	15%	50%	\$0.12	6	6	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-44.71	45	\$77,100.00	15%	50%	\$0.46	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	17,664.21	15	\$12,060.56	1%	at stock turnover	\$0.08	4	4	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	38,151.70	23	\$47,090.91	17%	at stock turnover	\$0.13	29	29	BEST Simulation
Warehouse, Controlled Atm.	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$85,700.00	15%	75%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,042.35	3	\$31,750.00	3%	11%	\$0.29	2	2	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	New	39,087.12	23	\$13,455.86	1%	at stock turnover	\$0.04	11	11	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,505.88	10	\$810.00	15%	75%	\$0.01	1	1	DEER
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	12,602.91	4	\$810.00	15%	75%	\$0.01	2	2	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,803.65	15	\$980.00	15%	75%	\$0.05	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$4,490.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	428.55	15	\$31,750.00	20%	65%	\$0.08	35	58	BEST Simulation
Warehouse, Controlled Atm.	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,296.96	5	\$270.00	15%	25%	\$0.03	23	49	Illinois TRM
Warehouse, Controlled Atm.	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	46.23	10	\$580.00	33%	60%	\$1.23	2	5	AEG research & analysis
Warehouse, Controlled Atm.	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,445.66	10	\$900.00	15%	30%	\$0.01	208	416	AEG research & analysis
Warehouse, Controlled Atm.	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	833.67	15	-\$42.92	100%	at stock turnover	-\$0.02	3	3	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,062.92	15	\$340.02	100%	at stock turnover	\$0.00	685	635	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	65.47	15	\$12.05	100%	at stock turnover	\$0.01	525	517	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	15.73	15	\$1.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	423.83	3	\$61,000.00	10%	75%	\$0.41	49	83	6th Plan
Warehouse, Controlled Atm.	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	118.37	6	\$3.28	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	96.34	15	\$59.66	100%	at stock turnover	\$0.04	709	432	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	368.04	3	\$31,750.00	3%	11%	\$0.25	5	14	BEST Simulation
Warehouse, Controlled Atm.	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,997.82	20	\$400,000.00	10%	15%	\$0.17	3	5	AEG research & analysis
Warehouse, Controlled Atm.	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	353.03	3	\$96,000.00	10%	75%	\$0.72	7	11	6th Plan
Warehouse, Controlled Atm.	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	361.63	15	\$31,750.00	20%	65%	\$0.09	5	8	BEST Simulation
Warehouse, Controlled Atm.	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,094.74	5	\$270.00	15%	25%	\$0.04	4	5	Illinois TRM
Warehouse, Controlled Atm.	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	39.90	10	\$580.00	44%	60%	\$1.33	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	6,294.25	10	\$900.00	15%	30%	\$0.01	31	47	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	833.67	15	-\$42.92	100%	at stock turnover	-\$0.02	1	1	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,062.92	15	\$340.02	100%	at stock turnover	\$0.00	164	153	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	65.47	15	\$12.05	100%	at stock turnover	\$0.00	125	124	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	15.73	15	\$1.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	118.37	6	\$3.28	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	96.34	15	\$59.66	100%	at stock turnover	\$0.04	169	91	EIA 2011
Warehouse, Controlled Atm.	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	306.36	3	\$31,750.00	3%	11%	\$0.29	1	1	BEST Simulation
Warehouse, Controlled Atm.	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	11,835.14	15	\$123.72	41%	at stock turnover	-\$0.01	0	0	Illinois TRM
Warehouse, Controlled Atm.	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,206.20	10	\$131.41	41%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse, Controlled Atm.	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,044.87	18	\$557.68	41%	at stock turnover	\$0.03	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse, Controlled Atm.	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,171.72	10	\$295.78	41%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionOven" v2.0

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,835.14	15	\$148.46	49%	at stock turnover	-\$0.01	0	0	Illinois TRM
Warehouse, Controlled Atm.	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,206.20	10	\$144.55	45%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse, Controlled Atm.	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,044.87	18	\$613.45	45%	at stock turnover	\$0.03	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse, Controlled Atm.	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,171.72	10	\$354.94	49%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse, Controlled Atm.	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,353.20	23	\$122,576.99	2%	at stock turnover	\$0.99	4	4	BEST Simulation
Warehouse, Controlled Atm.	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	18,450.42	10	\$15,000.00	15%	35%	\$0.09	51	53	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	250,751.69	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	31,057.97	15	\$31,750.00	20%	65%	\$0.08	194	201	BEST Simulation
Warehouse, Controlled Atm.	Heating	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,590.12	23	\$298.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,527.38	18	\$60.00	15%	50%	\$0.00	23	23	BEST Simulation
Warehouse, Controlled Atm.	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	126,468.58	45	\$126,270.00	15%	35%	\$0.07	357	364	BEST Simulation
Warehouse, Controlled Atm.	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,035.35	20	\$820.00	15%	50%	\$0.01	10	10	BEST Simulation
Warehouse, Controlled Atm.	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	30,486.48	45	\$69,280.00	15%	35%	\$0.15	83	88	BPA
Warehouse, Controlled Atm.	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	23,922.47	20	\$35,000.00	15%	50%	\$0.11	115	121	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	101,458.56	45	\$77,100.00	15%	35%	\$0.07	290	292	BEST Simulation
Warehouse, Controlled Atm.	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	36,322.35	3	\$61,000.00	10%	75%	\$0.42	320	340	6th Plan
Warehouse, Controlled Atm.	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	14	\$78,530.00	3%	75%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	26,285.88	3	\$31,750.00	3%	11%	\$0.25	29	32	BEST Simulation
Warehouse, Controlled Atm.	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	160,168.51	20	\$400,000.00	10%	15%	\$0.17	19	19	AEG research & analysis
Warehouse, Controlled Atm.	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,607.24	23	\$122,085.00	2%	at stock turnover	\$0.99	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	33,784.06	3	\$96,000.00	10%	75%	\$0.72	52	52	6th Plan
Warehouse, Controlled Atm.	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	18,202.07	10	\$15,000.00	15%	50%	\$0.10	15	15	AEG research & analysis
Warehouse, Controlled Atm.	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	250,428.19	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	30,763.74	15	\$31,750.00	20%	65%	\$0.09	33	33	BEST Simulation
Warehouse, Controlled Atm.	Heating	Geothermal Heat Pump - EER 14, COP 3.5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,274.27	23	\$255.64	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,750.21	18	\$50.00	15%	50%	\$0.00	3	3	BEST Simulation
Warehouse, Controlled Atm.	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	91,176.60	45	\$126,270.00	15%	50%	\$0.12	75	75	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,645.88	20	\$820.00	15%	50%	\$0.01	2	2	BEST Simulation
Warehouse, Controlled Atm.	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	28,912.56	45	\$69,280.00	15%	50%	\$0.16	24	24	BPA
Warehouse, Controlled Atm.	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	22,742.72	20	\$35,000.00	15%	50%	\$0.12	19	19	BEST Simulation
Warehouse, Controlled Atm.	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,198.82	45	\$77,100.00	15%	50%	\$0.46	11	11	BEST Simulation
Warehouse, Controlled Atm.	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	14	\$78,530.00	6%	75%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	24,555.88	3	\$31,750.00	3%	11%	\$0.29	5	5	BEST Simulation
Warehouse, Controlled Atm.	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,362.41	15	\$31,750.00	20%	65%	\$0.08	190	319	BEST Simulation
Warehouse, Controlled Atm.	Interior Lighting	Fruit Storage - Lighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,639.76	10	\$1,600.00	25%	75%	\$0.11	145	311	BEST Simulation
Warehouse, Controlled Atm.	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,144.87	15	-\$78.59	100%	at stock turnover	-\$0.03	14	20	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,459.69	15	\$622.60	100%	at stock turnover	\$0.00	3,876	3,593	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,562.13	5	\$10,810.00	5%	15%	\$0.22	51	107	Illinois TRM
Warehouse, Controlled Atm.	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,150.62	5	\$610.00	15%	50%	\$0.01	260	524	Illinois TRM
Warehouse, Controlled Atm.	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,860.51	12	\$40,000.00	3%	25%	\$0.28	528	1,145	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,127.55	16	\$390.00	1%	3%	\$0.01	8	18	Ameren Missouri TRM
Warehouse, Controlled Atm.	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$1,780.00	7%	15%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	851.36	5	\$11,000.00	10%	25%	\$1.73	5	19	AEG research & analysis
Warehouse, Controlled Atm.	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	81.31	15	\$17.20	100%	at stock turnover	\$0.00	3,534	3,484	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	19.54	15	\$2.57	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,216.12	3	\$61,000.00	10%	75%	\$0.41	248	432	6th Plan
Warehouse, Controlled Atm.	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	138.40	6	\$5.11	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	112.64	15	\$93.00	100%	at stock turnover	\$0.05	598	365	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,924.38	3	\$31,750.00	3%	11%	\$0.25	27	71	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,985.15	20	\$400,000.00	10%	15%	\$0.17	17	25	AEG research & analysis
Warehouse, Controlled Atm.	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,692.06	3	\$96,000.00	10%	75%	\$0.72	36	55	6th Plan
Warehouse, Controlled Atm.	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,827.03	15	\$31,750.00	20%	65%	\$0.09	27	41	BEST Simulation
Warehouse, Controlled Atm.	Interior Lighting	Fruit Storage - Lighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,261.50	10	\$1,600.00	25%	75%	\$0.14	21	32	BEST Simulation
Warehouse, Controlled Atm.	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,144.87	15	-\$78.59	100%	at stock turnover	-\$0.03	4	5	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,459.69	15	\$622.60	100%	at stock turnover	\$0.00	925	864	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	6,917.43	5	\$10,810.00	5%	15%	\$0.27	7	12	Illinois TRM
Warehouse, Controlled Atm.	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,959.58	5	\$610.00	15%	50%	\$0.01	37	59	Illinois TRM
Warehouse, Controlled Atm.	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	10,543.99	12	\$40,000.00	4%	25%	\$0.36	72	108	Ameren Missouri TRM
Warehouse, Controlled Atm.	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,645.22	16	\$390.00	1%	3%	\$0.02	1	2	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$1,780.00	7%	15%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	475.03	5	\$11,000.00	10%	25%	\$2.98	1	1	AEG research & analysis
Warehouse, Controlled Atm.	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	81.31	15	\$17.20	100%	at stock turnover	\$0.00	843	834	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	19.54	15	\$2.57	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	138.40	6	\$5.11	100%	at stock turnover	\$0.00	0	0	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	112.64	15	\$93.00	100%	at stock turnover	\$0.05	142	77	EIA 2011
Warehouse, Controlled Atm.	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,525.04	3	\$31,750.00	3%	11%	\$0.29	4	6	BEST Simulation
Warehouse, Controlled Atm.	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,055.32	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15.41	7	\$30.00	1%	3%	\$0.37	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse, Controlled Atm.	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	754.69	10	\$190.00	1%	3%	\$0.04	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculatorBulkPurchasingWaterCooler.xls
Warehouse, Controlled Atm.	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	13	\$0.00	79%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,320.90	15	\$4,110.00	15%	75%	\$0.07	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,412.00	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	253.35	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse, Controlled Atm.	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,267.70	3	\$31,750.00	3%	11%	\$0.26	86	84	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,238.26	7	\$1,400.00	1%	2%	\$0.16	0	0	Developed from RTF
Warehouse, Controlled Atm.	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Warehouse, Controlled Atm.	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse, Controlled Atm.	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	13	\$0.00	95%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	7,337.21	15	\$4,110.00	15%	75%	\$0.07	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,412.00	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	New	253.35	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse, Controlled Atm.	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,007.18	3	\$31,750.00	3%	11%	\$0.29	15	14	BEST Simulation
Warehouse, Controlled Atm.	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse, Controlled Atm.	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse, Controlled Atm.	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,971.01	6	\$14.79	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse, Controlled Atm.	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	688.48	4	\$2,650.00	10%	50%	\$1.01	0	0	Developed from RTF
Warehouse, Controlled Atm.	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	310.44	6	\$7.69	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse, Controlled Atm.	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	342.83	6	\$23.18	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse, Controlled Atm.	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,117.12	5	\$4,000.00	10%	25%	\$0.43	0	0	5th Plan
Warehouse, Controlled Atm.	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	801.79	6	\$4.63	77%	at stock turnover	\$0.00	0	0	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	428.08	6	\$5.47	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse, Controlled Atm.	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,876.69	5	\$19.21	89%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Warehouse, Controlled Atm.	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse, Controlled Atm.	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse, Controlled Atm.	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,971.01	6	\$14.79	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse, Controlled Atm.	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	New	757.39	4	\$2,650.00	10%	50%	\$0.88	0	0	Developed from RTF
Warehouse, Controlled Atm.	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	310.44	6	\$7.69	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse, Controlled Atm.	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	342.83	6	\$23.18	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse, Controlled Atm.	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,410.36	5	\$4,000.00	10%	25%	\$0.38	0	0	5th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	801.79	6	\$5.10	85%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Warehouse, Controlled Atm.	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	428.08	6	\$5.47	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse, Controlled Atm.	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,876.69	5	\$21.58	100%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Warehouse, Controlled Atm.	Refrigeration	Fruit Storage Refrigeration Retrofit	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	520,669.31	8	\$2,540.00	13%	70%	\$0.00	26,567	27,309	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Fruit Storage Refrigeration Tuneup - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	138,942.76	9	\$100.00	5%	77%	\$0.00	9,185	9,190	PacifiCorp Program Data
Warehouse, Controlled Atm.	Refrigeration	Fruit Storage Retrofit - CO2 Scrub - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	208,622.93	4	\$2,310.00	12%	25%	\$0.00	2,529	2,816	DEER
Warehouse, Controlled Atm.	Refrigeration	Fruit Storage Retrofit - Membrane	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	50,762.77	16	\$160.00	2%	25%	\$0.00	1,045	1,071	DEER
Warehouse, Controlled Atm.	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,812.60	9	\$1,424.51	92%	at stock turnover	\$0.02	1,265	1,161	EIA 2011
Warehouse, Controlled Atm.	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$17,280.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$5,220.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse, Controlled Atm.	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	31,861.28	10	\$8,468.20	92%	at stock turnover	\$0.06	2,061	1,804	EIA 2011
Warehouse, Controlled Atm.	Refrigeration	Fruit Storage Refrigeration Retrofit	per 100,000 sqft Warehouse - Refrigerated bldg.	New	514,476.67	8	\$2,540.00	13%	70%	\$0.00	4,828	4,828	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Fruit Storage Refrigeration Tuneup - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	138,864.57	9	\$100.00	5%	77%	\$0.00	1,647	1,647	PacifiCorp Program Data
Warehouse, Controlled Atm.	Refrigeration	Fruit Storage Retrofit - CO2 Scrub - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	New	197,331.52	4	\$2,310.00	12%	25%	\$0.00	479	479	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Refrigeration	Fruit Storage Retrofit - Membrane	per 100,000 sqft Warehouse - Refrigerated bldg.	New	50,219.41	16	\$160.00	2%	25%	\$0.00	190	190	DEER
Warehouse, Controlled Atm.	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse, Controlled Atm.	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,812.60	9	\$1,553.44	100%	at stock turnover	\$0.02	297	267	EIA 2011
Warehouse, Controlled Atm.	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$17,280.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$5,220.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse, Controlled Atm.	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse, Controlled Atm.	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	New	31,861.28	10	\$9,234.67	100%	at stock turnover	\$0.07	601	555	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,818.38	15	\$31,750.00	20%	65%	\$0.08	94	127	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,578.88	18	\$60.00	15%	50%	\$0.00	44	62	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,237.80	50	\$250,000.00	15%	25%	\$1.72	23	38	6th Plan
Warehouse, Controlled Atm.	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,424.20	45	\$126,270.00	15%	35%	\$0.07	111	149	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-29.51	20	\$820.00	15%	50%	\$0.01	-1	-1	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,787.50	20	\$35,000.00	15%	50%	\$0.11	46	63	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	334.96	45	\$77,100.00	15%	35%	\$0.07	5	7	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,288.69	3	\$61,000.00	10%	75%	\$0.41	153	214	6th Plan
Warehouse, Controlled Atm.	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,379.87	3	\$31,750.00	3%	11%	\$0.25	14	25	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	854.89	15	\$22,000.00	15%	75%	\$2.59	36	51	6th Plan
Warehouse, Controlled Atm.	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,119.01	18	\$17,000.00	15%	35%	\$0.20	118	162	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	40,975.26	20	\$34,193.73	100%	at stock turnover	\$0.09	588	595	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	24,259.30	15	\$3,000.00	13%	50%	\$0.01	713	890	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,108.17	20	\$400,000.00	10%	15%	\$0.17	7	7	AEG research & analysis
Warehouse, Controlled Atm.	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,895.36	3	\$96,000.00	10%	75%	\$0.72	20	20	6th Plan
Warehouse, Controlled Atm.	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$0.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,661.08	15	\$31,750.00	20%	65%	\$0.09	12	12	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,407.91	18	\$50.00	15%	50%	\$0.00	8	8	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,850.19	50	\$250,000.00	15%	25%	\$2.34	3	3	6th Plan
Warehouse, Controlled Atm.	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	44.49	45	\$126,270.00	15%	50%	\$0.12	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	889.16	20	\$820.00	15%	50%	\$0.01	5	5	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,048.12	20	\$35,000.00	15%	50%	\$0.12	6	6	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	82.30	45	\$77,100.00	15%	50%	\$0.46	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse, Controlled Atm.	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,396.44	3	\$31,750.00	3%	11%	\$0.29	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	488.50	15	\$13,000.00	15%	75%	\$2.57	5	5	6th Plan
Warehouse, Controlled Atm.	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,698.57	18	\$17,000.00	15%	35%	\$0.33	15	15	DEER
Warehouse, Controlled Atm.	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	New	35,462.94	20	\$31,217.33	100%	at stock turnover	\$0.09	69	69	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	14,369.59	15	\$3,000.00	19%	50%	\$0.02	70	72	BEST Simulation
Warehouse, Controlled Atm.	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse, Controlled Atm.	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,545.12	5	\$18,000.00	3%	75%	\$1.07	189	204	AEG study for PN&L
Warehouse, Controlled Atm.	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	408.38	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse, Controlled Atm.	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,564.24	5	\$4,000.00	1%	10%	\$0.24	24	26	AEG study for LA Dept of Water & Power
Warehouse, Controlled Atm.	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	9,897.41	5	\$1,320.00	25%	65%	\$0.03	113	115	DEER
Warehouse, Controlled Atm.	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,277.52	15	\$1,120.00	15%	75%	\$0.10	58	60	Hawaii TRM
Warehouse, Controlled Atm.	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	154.81	15	\$30.00	15%	75%	\$0.02	7	7	DEER
Warehouse, Controlled Atm.	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,291.03	15	\$4,420.00	16%	75%	\$0.20	101	107	BEST Simulation
Warehouse, Controlled Atm.	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,416.54	20	\$12,500.00	1%	30%	\$0.14	184	191	BEST Simulation
Warehouse, Controlled Atm.	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	823.63	13	\$40.31	77%	at stock turnover	\$0.01	43	41	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,396.21	5	\$18,000.00	3%	75%	\$1.07	179	198	AEG study for PN&L
Warehouse, Controlled Atm.	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,496.57	20	\$400,000.00	10%	15%	\$0.17	7	7	AEG research & analysis
Warehouse, Controlled Atm.	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,422.00	5	\$18,000.00	6%	75%	\$1.07	30	30	AEG study for PN&L
Warehouse, Controlled Atm.	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	416.05	7	\$1,400.00	1%	2%	\$0.16	0	0	Developed from RTF
Warehouse, Controlled Atm.	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse, Controlled Atm.	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,569.60	5	\$4,000.00	0%	75%	\$0.24	33	34	AEG study for LA Dept of Water & Power
Warehouse, Controlled Atm.	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,872.42	5	\$1,320.00	25%	65%	\$0.03	19	19	DEER
Warehouse, Controlled Atm.	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse, Controlled Atm.	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,291.72	15	\$1,120.00	15%	75%	\$0.10	10	10	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse, Controlled Atm.	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	155.11	15	\$30.00	15%	75%	\$0.02	1	1	DEER
Warehouse, Controlled Atm.	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,303.59	15	\$4,420.00	1%	75%	\$0.20	21	21	BEST Simulation
Warehouse, Controlled Atm.	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,516.06	20	\$12,500.00	1%	30%	\$0.14	31	31	BEST Simulation
Warehouse, Controlled Atm.	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	New	823.63	13	\$40.31	77%	at stock turnover	\$0.01	11	10	BEST Simulation
Warehouse, Controlled Atm.	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,291.43	5	\$18,000.00	6%	75%	\$1.07	28	29	AEG study for PN&L

Wyoming Commercial Measure Assumptions

Table H-10 Table of Wyoming Commercial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	22,250.02	23	\$404,692.02	3%	at stock turnover	\$0.13	61	53	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft College bldg.	Existing	24,728.31	23	\$49,850.16	49%	at stock turnover	\$0.21	1,196	1,207	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	20,255.52	10	\$813.00	15%	75%	\$0.01	1,624	1,804	BEST Simulation
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	6,310.50	15	\$1,086.00	15%	75%	\$0.02	491	576	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	Existing	865.66	15	\$4,845.00	15%	75%	\$0.50	62	83	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	11,898.24	15	\$23,400.00	45%	50%	\$0.47	139	166	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	Existing	14,825.28	12	\$13,500.00	15%	25%	\$0.11	362	447	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	2,646.62	10	\$4,500.00	15%	35%	\$0.05	131	147	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	Existing	4,453.69	15	\$9,525.00	20%	65%	\$0.04	500	558	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	Existing	5,424.77	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	19,598.06	23	\$332,465.68	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	2,250.32	18	\$129.00	15%	50%	\$0.01	199	233	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	Existing	17,038.29	10	\$39,801.00	18%	75%	\$0.29	1,067	2,863	DEER
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	4,669.16	50	\$75,000.00	15%	25%	\$0.72	108	146	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	-1,411.56	45	\$37,881.00	15%	35%	\$0.13	-69	-79	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	5,360.14	20	\$246.00	15%	35%	\$0.01	272	298	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	4,378.91	45	\$20,784.00	15%	35%	\$0.08	215	244	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	2,815.87	20	\$10,500.00	15%	50%	\$0.06	243	274	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	-2,967.78	45	\$23,130.00	15%	35%	\$0.04	-148	-165	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	Existing	9,594.84	15	\$70,392.92	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	Existing	5,136.55	3	\$18,300.00	10%	75%	\$0.21	813	929	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	Existing	7,302.99	23	\$79,850.58	31%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	Existing	0.00	15	\$175,020.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	3,740.53	3	\$9,525.00	3%	29%	\$0.14	237	319	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	Existing	50,052.32	23	\$75,425.46	12%	at stock turnover	\$0.15	75	75	BEST Simulation
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	Existing	13,193.78	10	\$813.00	15%	75%	\$0.01	247	305	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	Existing	20,992.04	4	\$813.00	15%	75%	\$0.01	387	491	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	Existing	9,405.68	15	\$1,086.00	15%	75%	\$0.01	170	224	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	Existing	983.56	15	\$4,986.00	15%	75%	\$0.43	16	25	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Cooling	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	15,664.56	20	\$120,000.00	10%	30%	\$0.08	145	145	AEG research & analysis
College	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	20,522.04	23	\$401,389.26	4%	at stock turnover	\$0.14	17	14	BEST Simulation
College	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per 30,000 sqft College bldg.	New	1,800.74	23	\$20,987.47	61%	at stock turnover	\$1.21	23	23	BEST Simulation
College	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	13,204.18	10	\$813.00	15%	75%	\$0.01	190	190	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	6,287.27	15	\$1,086.00	15%	75%	\$0.02	90	90	BEST Simulation
College	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft College bldg.	New	574.34	15	\$4,845.00	15%	75%	\$0.74	8	8	BEST Simulation
College	Cooling	Commissioning	per 30,000 sqft College bldg.	New	3,171.27	3	\$28,800.00	10%	75%	\$0.38	95	95	6th Plan
College	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	2,645.93	15	\$23,400.00	45%	50%	\$3.34	6	6	BEST Simulation
College	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft College bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Cooling	Destratification Fans (HVLS)	per 30,000 sqft College bldg.	New	9,003.72	12	\$13,500.00	15%	25%	\$0.17	41	42	Environment Design Guide, November 2007 (PDF)
College	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	1,700.91	10	\$4,500.00	15%	50%	\$0.05	28	28	AEG research & analysis
College	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
College	Cooling	Energy Management System	per 30,000 sqft College bldg.	New	2,874.57	15	\$9,525.00	20%	65%	\$0.05	60	60	BEST Simulation
College	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft College bldg.	New	5,424.77	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
College	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	18,057.76	23	\$329,752.37	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	1,390.88	18	\$129.00	15%	35%	\$0.03	13	13	BEST Simulation
College	Cooling	HVAC - Economizer	per 30,000 sqft College bldg.	New	10,399.54	10	\$39,801.00	18%	75%	\$0.46	46	264	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	2,878.81	50	\$75,000.00	15%	25%	\$1.16	13	13	6th Plan
College	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	-2,028.69	45	\$37,881.00	15%	50%	\$0.23	-33	-33	BEST Simulation
College	Cooling	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	3,376.69	20	\$246.00	15%	50%	\$0.01	55	55	BEST Simulation
College	Cooling	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	2,701.21	45	\$20,784.00	15%	50%	\$0.09	44	44	BPA
College	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	1,802.62	20	\$10,500.00	15%	50%	\$0.06	29	29	BEST Simulation
College	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	-38.00	45	\$23,130.00	15%	50%	\$0.32	-1	-1	BEST Simulation
College	Cooling	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Cooling	PTAC - EER 12.2	per 30,000 sqft College bldg.	New	8,594.43	15	\$70,300.31	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Cooling	RTU - EER 10.1	per 30,000 sqft College bldg.	New	6,720.93	23	\$79,198.91	38%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Cooling	RTU - Evaporative Precooler	per 30,000 sqft College bldg.	New	0.00	15	\$175,020.00	15%	75%	\$10.00	0	0	DEER
College	Cooling	Strategic Energy Management	per 30,000 sqft College bldg.	New	2,314.20	3	\$9,525.00	3%	29%	\$0.17	36	36	BEST Simulation
College	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft College bldg.	New	35,403.14	23	\$63,509.90	15%	at stock turnover	\$0.18	15	15	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft College bldg.	New	6,813.12	10	\$813.00	15%	75%	\$0.02	24	25	DEER
College	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft College bldg.	New	10,692.02	4	\$813.00	15%	75%	\$0.02	38	38	BEST Simulation
College	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
College	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft College bldg.	New	8,239.63	15	\$1,086.00	15%	75%	\$0.02	29	30	BEST Simulation
College	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft College bldg.	New	557.52	15	\$4,986.00	15%	75%	\$0.76	2	2	BEST Simulation
College	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	156.13	15	\$9,525.00	20%	65%	\$0.04	40	61	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	413.20	5	\$11,814.00	15%	25%	\$4.91	22	44	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	322.37	10	\$3,333.00	33%	60%	\$1.11	47	94	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	Existing	2,422.63	10	\$5,220.00	15%	30%	\$0.25	200	380	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	150.99	15	-\$10.14	100%	at stock turnover	-\$0.03	1	2	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	192.51	15	\$80.32	100%	at stock turnover	\$0.01	383	359	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	42.62	15	\$10.23	100%	at stock turnover	\$0.03	1,271	1,306	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	10.24	15	\$1.53	100%	at stock turnover	\$0.00	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	153.37	3	\$18,300.00	10%	75%	\$0.21	56	87	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	36.78	6	\$1.33	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	29.94	15	\$24.18	100%	at stock turnover	\$0.05	12	14	EIA 2011
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	134.02	3	\$9,525.00	3%	29%	\$0.14	20	39	BEST Simulation
College	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	786.72	20	\$120,000.00	10%	30%	\$0.08	12	20	AEG research & analysis
College	Exterior Lighting	Commissioning	per 30,000 sqft College bldg.	New	124.70	3	\$28,800.00	10%	75%	\$0.38	6	10	6th Plan
College	Exterior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	142.44	15	\$9,525.00	20%	65%	\$0.05	5	8	BEST Simulation
College	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft College bldg.	New	362.10	5	\$11,814.00	15%	25%	\$5.29	3	4	Illinois TRM
College	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	320.37	10	\$3,333.00	44%	60%	\$1.04	4	6	AEG research & analysis
College	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft College bldg.	New	2,151.84	10	\$5,220.00	15%	30%	\$0.27	25	40	AEG research & analysis
College	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	150.99	15	-\$10.14	100%	at stock turnover	-\$0.03	0	1	EIA 2011
College	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	192.51	15	\$80.32	100%	at stock turnover	\$0.01	73	69	EIA 2011
College	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	42.62	15	\$10.23	100%	at stock turnover	\$0.03	241	251	EIA 2011
College	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	10.24	15	\$1.53	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Exterior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	36.78	6	\$1.33	100%	at stock turnover	\$0.01	0	0	EIA 2011
College	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	29.94	15	\$24.18	100%	at stock turnover	\$0.05	2	2	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Exterior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	117.52	3	\$9,525.00	3%	29%	\$0.17	3	5	BEST Simulation
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	Existing	16,955.74	15	\$91.36	21%	at stock turnover	\$0.00	246	241	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,728.07	10	\$97.04	21%	at stock turnover	\$0.01	87	76	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	Existing	2,929.61	18	\$411.81	21%	at stock turnover	\$0.02	33	32	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	Existing	3,111.34	10	\$218.41	21%	at stock turnover	\$0.01	106	92	Developed from RTF "ComCookingConvectionOven" v2.0
College	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft College bldg.	New	16,955.74	15	\$127.90	29%	at stock turnover	\$0.00	73	70	Illinois TRM
College	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft College bldg.	New	1,728.07	10	\$135.86	29%	at stock turnover	\$0.01	22	20	Developed from RTF "ComCookingConvectionFryer" v2.0
College	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft College bldg.	New	2,929.61	18	\$576.53	29%	at stock turnover	\$0.02	8	8	Developed from RTF "ComCookingHotFoodCabinet" v2.0
College	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft College bldg.	New	3,111.34	10	\$305.78	29%	at stock turnover	\$0.01	27	25	Developed from RTF "ComCookingConvectionOven" v2.0
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	Existing	18,442.42	23	\$47,674.76	3%	at stock turnover	\$0.13	46	40	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	-8,310.16	15	\$23,400.00	45%	50%	\$0.47	-23	-25	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	10,538.22	10	\$4,500.00	15%	35%	\$0.05	120	125	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	Existing	146,495.73	15	\$3,573.00	15%	25%	\$0.00	731	731	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Energy Management System	per 30,000 sqft College bldg.	Existing	17,739.98	15	\$9,525.00	20%	65%	\$0.04	460	472	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	Existing	33,578.36	23	\$41,251.60	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	-1,745.02	18	\$129.00	15%	50%	\$0.01	-36	-36	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	26,484.89	45	\$37,881.00	15%	35%	\$0.13	299	313	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	-1,581.77	20	\$246.00	15%	35%	\$0.01	-18	-19	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	Existing	17,412.12	45	\$20,784.00	15%	35%	\$0.08	197	206	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	13,663.50	20	\$10,500.00	15%	50%	\$0.06	272	283	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	52,717.40	45	\$23,130.00	15%	35%	\$0.04	615	623	BEST Simulation
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	Existing	20,476.22	3	\$18,300.00	10%	75%	\$0.21	746	786	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	Existing	0.00	14	\$100,251.00	3%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	14,912.11	3	\$9,525.00	3%	29%	\$0.14	217	242	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	95,796.11	20	\$120,000.00	10%	30%	\$0.08	157	157	AEG research & analysis
College	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft College bldg.	New	17,861.26	23	\$48,756.30	4%	at stock turnover	\$0.14	12	10	BEST Simulation
College	Heating	Commissioning	per 30,000 sqft College bldg.	New	19,156.01	3	\$28,800.00	10%	75%	\$0.38	101	102	6th Plan
College	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	-2,333.72	15	\$23,400.00	45%	50%	\$3.34	-1	-1	BEST Simulation
College	Heating	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	10,418.35	10	\$4,500.00	15%	50%	\$0.05	30	30	AEG research & analysis
College	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft College bldg.	New	146,495.73	15	\$3,573.00	15%	25%	\$0.00	100	100	Developed from RTF
College	Heating	Energy Management System	per 30,000 sqft College bldg.	New	17,608.30	15	\$9,525.00	20%	65%	\$0.05	65	65	BEST Simulation
College	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft College bldg.	New	30,882.64	23	\$40,914.98	0%	at stock turnover	\$0.00	0	0	BEST Simulation
College	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	-1,827.05	18	\$129.00	15%	35%	\$0.03	-3	-3	BEST Simulation
College	Heating	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Heating	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	15,463.58	45	\$37,881.00	15%	50%	\$0.23	44	44	BEST Simulation
College	Heating	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	-1,664.31	20	\$246.00	15%	50%	\$0.01	-5	-5	BEST Simulation
College	Heating	Insulation - Foundation - R-10	per 30,000 sqft College bldg.	New	16,516.46	45	\$20,784.00	15%	50%	\$0.09	47	47	BPA
College	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	13,456.20	20	\$10,500.00	15%	50%	\$0.06	39	39	BEST Simulation
College	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	5,703.01	45	\$23,130.00	15%	50%	\$0.32	16	16	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Heating	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Heating	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft College bldg.	New	0.00	14	\$100,251.00	6%	75%	\$10.00	0	0	DEER
College	Heating	Strategic Energy Management	per 30,000 sqft College bldg.	New	14,149.40	3	\$9,525.00	3%	29%	\$0.17	39	39	BEST Simulation
College	Heating	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	Existing	1,002.44	15	\$9,525.00	20%	65%	\$0.04	246	392	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	514.66	15	-\$34.56	100%	at stock turnover	-\$0.03	6	10	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	656.18	15	\$273.79	100%	at stock turnover	\$0.01	1,589	1,490	EIA 2011
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	Existing	6,068.43	5	\$19,590.00	5%	15%	\$0.52	103	221	Illinois TRM
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	Existing	9,745.53	5	\$1,047.00	15%	50%	\$0.02	637	1,181	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	Existing	5,497.92	12	\$12,000.00	3%	25%	\$0.20	623	1,298	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	Existing	832.60	16	\$660.00	1%	3%	\$0.06	9	20	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	5,962.53	10	\$2,730.00	7%	45%	\$0.05	849	2,442	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 30,000 sqft College bldg.	Existing	0.00	8	\$3,006.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	Existing	455.65	5	\$3,300.00	10%	25%	\$0.91	8	29	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	173.21	15	\$41.58	100%	at stock turnover	\$0.03	8,562	8,801	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	41.62	15	\$6.20	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	Existing	881.14	3	\$18,300.00	10%	75%	\$0.21	293	498	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	189.64	6	\$6.85	100%	at stock turnover	\$0.01	0	5	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	154.34	15	\$124.66	100%	at stock turnover	\$0.05	1,142	1,304	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	800.62	3	\$9,525.00	3%	29%	\$0.14	109	263	BEST Simulation
College	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	4,778.13	20	\$120,000.00	10%	30%	\$0.08	74	119	AEG research & analysis
College	Interior Lighting	Commissioning	per 30,000 sqft College bldg.	New	786.83	3	\$28,800.00	10%	75%	\$0.38	39	63	6th Plan
College	Interior Lighting	Energy Management System	per 30,000 sqft College bldg.	New	902.43	15	\$9,525.00	20%	65%	\$0.05	31	51	BEST Simulation
College	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	514.66	15	-\$34.56	100%	at stock turnover	-\$0.03	2	3	EIA 2011
College	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	656.18	15	\$273.79	100%	at stock turnover	\$0.01	303	285	EIA 2011
College	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft College bldg.	New	5,471.32	5	\$19,590.00	5%	15%	\$0.57	14	23	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft College bldg.	New	8,916.78	5	\$1,047.00	15%	50%	\$0.02	81	131	Illinois TRM
College	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft College bldg.	New	4,902.41	12	\$12,000.00	4%	25%	\$0.22	77	125	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft College bldg.	New	768.33	16	\$660.00	1%	3%	\$0.07	1	2	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft College bldg.	New	5,340.74	10	\$2,730.00	22%	45%	\$0.06	43	150	Ameren Missouri TRM
College	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft College bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Lighting - Timelocks and Timers	per 30,000 sqft College bldg.	New	0.00	8	\$3,006.00	7%	15%	\$10.00	0	0	DEER
College	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft College bldg.	New	309.99	5	\$3,300.00	10%	25%	\$1.24	1	2	AEG research & analysis
College	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	173.21	15	\$41.58	100%	at stock turnover	\$0.03	1,622	1,692	EIA 2011
College	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	41.62	15	\$6.20	100%	at stock turnover	\$0.00	0	0	EIA 2011
College	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
College	Interior Lighting	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	189.64	6	\$6.85	100%	at stock turnover	\$0.01	0	2	EIA 2011
College	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	154.34	15	\$124.66	100%	at stock turnover	\$0.05	222	233	EIA 2011
College	Interior Lighting	Strategic Energy Management	per 30,000 sqft College bldg.	New	713.93	3	\$9,525.00	3%	29%	\$0.17	19	30	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	428.19	7	\$1,398.00	1%	4%	\$0.13	4	4	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	Existing	6.21	7	\$30.00	1%	3%	\$0.92	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	Existing	306.24	10	\$195.00	1%	3%	\$0.10	2	2	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	Existing	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	Existing	622.38	15	\$96.00	15%	75%	\$0.02	96	96	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	Existing	814.51	10	\$188.68	36%	at stock turnover	\$0.03	66	61	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	Existing	292.29	10	\$358.49	90%	at stock turnover	\$0.18	58	53	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	Existing	11.32	5	\$60.00	15%	75%	\$1.09	1	2	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	413.74	3	\$9,525.00	3%	29%	\$0.15	108	102	BEST Simulation
College	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	428.24	7	\$1,398.00	1%	2%	\$0.13	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft College bldg.	New	6.27	7	\$3.00	1%	3%	\$0.09	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
College	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft College bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
College	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft College bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
College	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft College bldg.	New	622.38	15	\$96.00	15%	75%	\$0.02	15	15	AEG research & analysis
College	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft College bldg.	New	814.51	10	\$226.42	43%	at stock turnover	\$0.04	15	14	AEG research & analysis
College	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft College bldg.	New	292.29	10	\$397.00	100%	at stock turnover	\$0.20	12	11	Hawaii TRM
College	Miscellaneous	Pool Pump - Timer	per 30,000 sqft College bldg.	New	10.93	5	\$60.00	15%	75%	\$1.10	0	0	AEG research & analysis
College	Miscellaneous	Strategic Energy Management	per 30,000 sqft College bldg.	New	386.62	3	\$9,525.00	3%	29%	\$0.17	20	19	BEST Simulation
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	Existing	5,194.75	6	\$38.98	100%	at stock turnover	\$0.00	513	542	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	Existing	724.75	4	\$795.00	10%	50%	\$0.30	530	618	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	Existing	306.82	6	\$7.60	100%	at stock turnover	\$0.01	30	32	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	Existing	903.56	6	\$61.09	100%	at stock turnover	\$0.01	36	38	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	Existing	2,213.70	5	\$1,200.00	10%	25%	\$0.13	635	710	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	Existing	264.15	6	\$1.98	100%	at stock turnover	\$0.00	48	50	Assumed same as Desktop
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	Existing	1,410.31	6	\$18.03	100%	at stock turnover	\$0.00	32	33	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	Existing	758.17	6	\$5.69	100%	at stock turnover	\$0.00	196	202	Assumed same as Desktop
College	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft College bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft College bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
College	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft College bldg.	New	5,194.75	6	\$38.98	100%	at stock turnover	\$0.00	93	94	ENERGY STAR Calculator
College	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft College bldg.	New	689.91	4	\$795.00	10%	50%	\$0.30	71	76	Developed from RTF
College	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft College bldg.	New	306.82	6	\$7.60	100%	at stock turnover	\$0.01	5	6	ENERGY STAR Calculator
College	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft College bldg.	New	903.56	6	\$61.09	100%	at stock turnover	\$0.01	6	7	ENERGY STAR Calculator
College	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft College bldg.	New	2,149.04	5	\$1,200.00	10%	25%	\$0.13	83	89	5th Plan
College	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft College bldg.	New	264.15	6	\$1.98	100%	at stock turnover	\$0.00	8	9	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft College bldg.	New	1,410.31	6	\$18.03	100%	at stock turnover	\$0.00	5	5	ENERGY STAR Calculator
College	Office Equipment	Server - ENERGY STAR	per 30,000 sqft College bldg.	New	758.17	6	\$5.69	100%	at stock turnover	\$0.00	31	31	Assumed same as Desktop
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	Existing	645.44	9	\$19.31	27%	at stock turnover	\$0.00	13	12	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	Existing	1,754.25	8	\$2,544.00	0%	25%	\$0.25	34	34	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	Existing	1,232.00	9	\$105.00	0%	25%	\$0.01	12	12	PacifiCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	Existing	216.82	15	\$315.00	0%	25%	\$0.17	19	21	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	Existing	425.73	15	\$5,388.00	0%	25%	\$1.40	37	41	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	Existing	379.00	4	\$4,524.00	0%	25%	\$3.39	2	2	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	Existing	1,488.83	10	\$114.78	27%	at stock turnover	\$0.02	88	77	EIA 2011
College	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft College bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft College bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
College	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft College bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
College	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft College bldg.	New	645.44	9	\$27.03	37%	at stock turnover	\$0.01	3	3	EIA 2011
College	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft College bldg.	New	1,755.35	8	\$2,544.00	0%	25%	\$0.25	6	6	Developed from RTF
College	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft College bldg.	New	1,232.00	9	\$105.00	0%	25%	\$0.01	2	2	PacifiCorp Program Data
College	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft College bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft College bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
College	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft College bldg.	New	213.38	15	\$315.00	0%	25%	\$0.17	4	4	Developed from RTF
College	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft College bldg.	New	419.50	15	\$5,388.00	0%	25%	\$1.43	7	7	AEO 2013
College	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft College bldg.	New	379.50	4	\$4,524.00	0%	25%	\$3.39	0	0	Developed from RTF
College	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft College bldg.	New	1,488.83	10	\$160.70	37%	at stock turnover	\$0.03	25	23	EIA 2011
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	Existing	0.00	15	\$23,400.00	45%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	Existing	2,002.04	15	\$9,525.00	20%	65%	\$0.04	197	261	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	Existing	1,096.37	18	\$129.00	15%	50%	\$0.01	90	124	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	Existing	2,285.22	50	\$75,000.00	15%	25%	\$0.72	48	78	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	Existing	1,269.69	20	\$10,500.00	15%	50%	\$0.06	96	129	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	Existing	377.01	45	\$23,130.00	15%	35%	\$0.04	17	22	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	Existing	2,321.32	3	\$18,300.00	10%	75%	\$0.21	320	437	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	Existing	1,690.31	3	\$9,525.00	3%	29%	\$0.14	93	168	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	Existing	603.37	15	\$6,600.00	15%	75%	\$1.14	75	105	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	Existing	5,766.92	18	\$5,100.00	15%	35%	\$0.09	248	334	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	Existing	28,073.26	20	\$51,019.52	100%	at stock turnover	\$0.19	346	350	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	Existing	17,059.99	15	\$3,828.00	13%	50%	\$0.03	1,469	1,811	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
College	Ventilation	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	7,538.41	20	\$120,000.00	10%	30%	\$0.08	59	59	AEG research & analysis
College	Ventilation	Commissioning	per 30,000 sqft College bldg.	New	1,517.44	3	\$28,800.00	10%	75%	\$0.38	38	39	6th Plan
College	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft College bldg.	New	0.00	15	\$23,400.00	45%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft College bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
College	Ventilation	Energy Management System	per 30,000 sqft College bldg.	New	1,374.47	15	\$9,525.00	20%	65%	\$0.05	24	24	BEST Simulation
College	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft College bldg.	New	762.32	18	\$129.00	15%	35%	\$0.03	6	6	BEST Simulation
College	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft College bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
College	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft College bldg.	New	1,472.61	50	\$75,000.00	15%	25%	\$1.16	6	6	6th Plan
College	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft College bldg.	New	0.00	45	\$37,881.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft College bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
College	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft College bldg.	New	867.50	20	\$10,500.00	15%	50%	\$0.06	12	12	BEST Simulation
College	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft College bldg.	New	52.13	45	\$23,130.00	15%	50%	\$0.32	1	1	BEST Simulation
College	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Ventilation	Retrocommissioning	per 30,000 sqft College bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
College	Ventilation	Strategic Energy Management	per 30,000 sqft College bldg.	New	1,105.56	3	\$9,525.00	3%	29%	\$0.17	15	15	BEST Simulation
College	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft College bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
College	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft College bldg.	New	392.53	15	\$3,900.00	15%	75%	\$0.98	9	9	6th Plan
College	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft College bldg.	New	3,795.63	18	\$5,100.00	15%	35%	\$0.13	30	30	DEER
College	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft College bldg.	New	28,181.32	20	\$51,026.66	100%	at stock turnover	\$0.19	25	25	BEST Simulation
College	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft College bldg.	New	11,892.36	15	\$3,828.00	19%	50%	\$0.04	142	143	BEST Simulation
College	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft College bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	6,365.43	5	\$5,400.00	3%	75%	\$0.19	171	179	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	Existing	1,543.24	7	\$1,398.00	1%	4%	\$0.13	2	2	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	Existing	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	Existing	6,546.06	5	\$1,200.00	1%	10%	\$0.04	23	23	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	Existing	16,904.80	5	\$993.00	25%	65%	\$0.01	96	259	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	Existing	2,343.72	15	\$66.00	15%	25%	\$0.00	9	9	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	Existing	171.45	15	\$9.00	15%	75%	\$0.01	4	4	DEER
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	Existing	4,093.53	15	\$2,421.00	16%	75%	\$0.07	91	94	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	Existing	12,976.96	20	\$37,500.00	1%	30%	\$0.25	136	150	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	Existing	1,407.68	13	\$121.37	13%	at stock turnover	\$0.01	37	35	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	Existing	6,095.90	5	\$5,400.00	3%	75%	\$0.19	161	174	AEG study for PN&L
College	Water Heating	Advanced New Construction Designs	per 30,000 sqft College bldg.	New	19,235.65	20	\$120,000.00	10%	30%	\$0.08	20	20	AEG research & analysis
College	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	5,969.99	5	\$5,400.00	6%	75%	\$0.19	21	21	AEG study for PN&L
College	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft College bldg.	New	1,453.58	7	\$1,398.00	1%	2%	\$0.13	0	0	Developed from RTF
College	Water Heating	Water Heater - Desuperheater	per 30,000 sqft College bldg.	New	0.00	20	\$1,116.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
College	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft College bldg.	New	6,620.81	5	\$1,200.00	0%	75%	\$0.04	25	26	AEG study for LA Dept of Water & Power
College	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft College bldg.	New	16,867.22	5	\$993.00	25%	65%	\$0.01	13	35	DEER
College	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft College bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
College	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft College bldg.	New	2,338.11	15	\$66.00	15%	25%	\$0.00	1	1	Hawaii TRM
College	Water Heating	Water Heater - Install Timer	per 30,000 sqft College bldg.	New	171.85	15	\$9.00	15%	75%	\$0.01	1	1	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
College	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft College bldg.	New	3,989.76	15	\$2,421.00	1%	75%	\$0.07	15	15	BEST Simulation
College	Water Heating	Water Heater - Solar System	per 30,000 sqft College bldg.	New	12,273.61	20	\$37,500.00	1%	30%	\$0.25	18	18	BEST Simulation
College	Water Heating	Water Heating - EF 0.89	per 30,000 sqft College bldg.	New	1,407.68	13	\$121.37	13%	at stock turnover	\$0.01	7	7	BEST Simulation
College	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft College bldg.	New	5,741.93	5	\$5,400.00	6%	75%	\$0.19	20	20	AEG study for PN&L
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	648,689.98	23	\$1,053,485.70	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	Existing	375,386.10	23	\$158,372.19	19%	at stock turnover	\$0.04	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	301,245.20	10	\$4,070.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	39,945.08	15	\$10,780.00	15%	75%	\$0.02	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	Existing	10,776.08	15	\$4,395.00	15%	75%	\$0.03	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	169,953.53	15	\$39,000.00	45%	50%	\$0.02	0	0	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	Existing	283,411.69	15	\$105,000.00	10%	75%	\$0.03	0	0	E3T Website
Data Center	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	Existing	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	43,311.19	10	\$7,500.00	15%	35%	\$0.02	0	0	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$17,860.00	15%	25%	\$0.00	0	0	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	78,694.80	15	\$15,875.00	20%	65%	\$0.01	0	0	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	Existing	158,674.16	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	572,048.35	23	\$866,953.71	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	4,619.56	18	\$115.00	15%	50%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	Existing	316,029.58	10	\$36,100.00	18%	75%	\$0.01	0	0	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	181,784.07	15	\$1,300.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	76,810.31	50	\$125,000.00	15%	75%	\$0.06	0	0	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	16,015.05	45	\$63,135.00	15%	35%	\$0.05	0	0	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	16,014.05	20	\$410.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	71,142.79	45	\$34,640.00	15%	35%	\$0.03	0	0	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	46,411.62	20	\$17,500.00	15%	50%	\$0.02	0	0	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	Existing	280,709.65	15	\$189,756.04	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	78,021.22	3	\$30,500.00	10%	75%	\$0.06	0	0	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	Existing	508,376.95	23	\$1,080,796.57	57%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$158,735.00	15%	75%	\$10.00	0	0	DEER
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	Existing	605,951.93	23	\$239,624.01	19%	at stock turnover	\$0.04	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	174,216.16	10	\$4,070.00	15%	75%	\$0.00	0	0	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	Existing	242,250.09	4	\$4,070.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	Existing	37,764.03	15	\$10,780.00	15%	75%	\$0.02	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	Existing	10,259.97	15	\$49,560.00	15%	75%	\$0.36	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	353,543.27	20	\$200,000.00	10%	15%	\$0.25	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	535,590.60	23	\$896,592.30	2%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Data Center bldg.	New	341,580.16	23	\$129,368.76	20%	at stock turnover	\$0.04	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	278,382.06	10	\$4,070.00	15%	75%	\$0.07	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	34,824.90	15	\$10,780.00	15%	75%	\$0.94	0	0	BEST Simulation
Data Center	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$4,395.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Commissioning	per 50,000 sqft Data Center bldg.	New	62,909.55	3	\$48,000.00	10%	75%	\$1.29	0	0	6th Plan
Data Center	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	41,089.26	15	\$39,000.00	45%	50%	\$3.29	0	0	BEST Simulation
Data Center	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Data Center bldg.	New	227,736.68	15	\$105,000.00	10%	75%	\$1.26	1	1	E3T Website
Data Center	Cooling	De-stratification Fans (HVLS)	per 50,000 sqft Data Center bldg.	New	0.00	12	\$22,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Data Center	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	37,296.66	10	\$7,500.00	15%	50%	\$0.37	0	0	AEG research & analysis
Data Center	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	407,950.73	15	\$17,860.00	15%	25%	\$0.07	0	0	Developed from RTF
Data Center	Cooling	Energy Management System	per 50,000 sqft Data Center bldg.	New	64,877.56	15	\$15,875.00	20%	65%	\$0.15	0	0	BEST Simulation
Data Center	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Data Center bldg.	New	158,674.16	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Data Center	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	473,268.66	23	\$737,840.12	1%	at stock turnover	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	23,316.27	18	\$110.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Cooling	HVAC - Economizer	per 50,000 sqft Data Center bldg.	New	246,878.23	10	\$36,100.00	18%	75%	\$0.54	0	1	DEER
Data Center	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	152,561.18	15	\$1,300.00	15%	75%	\$0.09	1	1	BEST Simulation
Data Center	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	61,423.13	50	\$125,000.00	15%	75%	\$1.82	0	0	6th Plan
Data Center	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	-14,365.13	45	\$63,135.00	15%	50%	\$0.63	0	0	BEST Simulation
Data Center	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	47,728.56	20	\$410.00	15%	50%	\$0.03	0	0	BEST Simulation
Data Center	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	57,625.72	45	\$34,640.00	15%	50%	\$0.61	0	0	BPA
Data Center	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	40,058.08	20	\$17,500.00	15%	50%	\$0.35	0	0	BEST Simulation
Data Center	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	-719.20	45	\$38,550.00	15%	50%	\$3.56	0	0	BEST Simulation
Data Center	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	PTAC - EER 12.2	per 50,000 sqft Data Center bldg.	New	246,759.19	15	\$180,155.15	1%	at stock turnover	\$0.08	0	0	BEST Simulation
Data Center	Cooling	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Cooling	RTU - EER 12.0	per 50,000 sqft Data Center bldg.	New	418,401.23	23	\$919,835.81	59%	at stock turnover	\$0.23	0	0	BEST Simulation
Data Center	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Data Center bldg.	New	0.00	15	\$158,735.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Cooling	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Data Center bldg.	New	552,540.11	23	\$195,740.56	23%	at stock turnover	\$0.04	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Data Center bldg.	New	150,543.95	10	\$4,070.00	15%	75%	\$0.12	0	0	DEER
Data Center	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Data Center bldg.	New	208,706.68	4	\$4,070.00	15%	75%	\$0.16	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Data Center bldg.	New	27,655.19	15	\$10,780.00	15%	75%	\$1.14	0	0	BEST Simulation
Data Center	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Data Center bldg.	New	0.00	15	\$49,560.00	15%	75%	\$10.00	0	0	BEST Simulation
Data Center	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$0.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$3,945.00	15%	25%	\$10.00	0	0	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$2,845.00	33%	60%	\$10.00	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$4,455.00	15%	30%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	311.18	15	-\$13.73	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	396.74	15	\$108.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	209.36	15	\$45.08	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	48.99	15	\$4.80	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$0.00	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	33.19	6	\$0.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	27.01	15	\$14.34	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	973.57	20	\$200,000.00	10%	15%	\$0.25	0	0	AEG research & analysis
Data Center	Exterior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	172.38	3	\$48,000.00	10%	75%	\$1.29	0	0	6th Plan
Data Center	Exterior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	176.99	15	\$15,875.00	20%	65%	\$0.15	0	0	BEST Simulation
Data Center	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	535.86	5	\$3,945.00	15%	25%	\$0.13	0	0	Illinois TRM
Data Center	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	148.22	10	\$2,845.00	44%	60%	\$0.20	0	0	AEG research & analysis
Data Center	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Data Center bldg.	New	3,083.63	10	\$4,455.00	15%	30%	\$0.02	0	0	AEG research & analysis
Data Center	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	311.18	15	-\$13.73	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Data Center	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	396.74	15	\$108.79	100%	at stock turnover	\$0.01	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	209.36	15	\$45.08	100%	at stock turnover	\$0.02	0	0	EIA 2011
Data Center	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	48.99	15	\$4.80	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Exterior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	33.19	6	\$0.79	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	27.01	15	\$14.34	100%	at stock turnover	\$0.03	0	0	EIA 2011
Data Center	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	7,532.23	15	\$7.03	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	767.66	10	\$7.47	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,301.42	18	\$31.69	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,382.14	10	\$16.81	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	7,532.23	15	\$7.73	4%	at stock turnover	\$0.00	0	0	Illinois TRM
Data Center	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	767.66	10	\$8.21	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Data Center	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,301.42	18	\$34.86	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Data Center	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,382.14	10	\$18.49	4%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	Existing	3,803.39	23	\$49,635.72	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	-10,455.91	15	\$39,000.00	45%	50%	\$0.02	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	5,976.99	10	\$7,500.00	15%	35%	\$0.02	0	0	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	Existing	75,909.88	15	\$17,860.00	15%	25%	\$0.02	0	0	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	10,125.11	15	\$15,875.00	20%	65%	\$0.01	0	0	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	Existing	22,466.22	23	\$27,600.13	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	-718.49	18	\$115.00	15%	50%	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	-13,235.14	15	\$1,300.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	38,618.83	45	\$63,135.00	15%	35%	\$0.05	0	0	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	-3,931.80	20	\$410.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	Existing	9,697.79	45	\$34,640.00	15%	35%	\$0.03	0	0	BPA
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	7,817.84	20	\$17,500.00	15%	50%	\$0.02	0	0	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	11,380.06	3	\$30,500.00	10%	75%	\$0.06	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	Existing	0.00	14	\$223,190.00	3%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	53,849.57	20	\$200,000.00	10%	15%	\$0.25	0	0	AEG research & analysis
Data Center	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Data Center bldg.	New	9,556.05	23	\$44,217.85	2%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Heating	Commissioning	per 50,000 sqft Data Center bldg.	New	10,732.95	3	\$48,000.00	10%	75%	\$1.29	0	0	6th Plan
Data Center	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	-3,334.10	15	\$39,000.00	45%	50%	\$3.29	0	0	BEST Simulation
Data Center	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	5,671.59	10	\$7,500.00	15%	50%	\$0.37	0	0	AEG research & analysis
Data Center	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Data Center bldg.	New	75,854.38	15	\$17,860.00	15%	25%	\$0.07	0	0	Developed from RTF
Data Center	Heating	Energy Management System	per 50,000 sqft Data Center bldg.	New	9,751.50	15	\$15,875.00	20%	65%	\$0.15	0	0	BEST Simulation
Data Center	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Data Center bldg.	New	20,662.59	23	\$27,374.91	1%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	740.10	18	\$110.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	-12,097.69	15	\$1,300.00	15%	75%	\$0.09	0	0	BEST Simulation
Data Center	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	32,097.85	45	\$63,135.00	15%	50%	\$0.63	0	0	BEST Simulation
Data Center	Heating	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	-1,994.35	20	\$410.00	15%	50%	\$0.03	0	0	BEST Simulation
Data Center	Heating	Insulation - Foundation - R-10	per 50,000 sqft Data Center bldg.	New	9,391.45	45	\$34,640.00	15%	50%	\$0.61	0	0	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	7,435.67	20	\$17,500.00	15%	50%	\$0.35	0	0	BEST Simulation
Data Center	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	3,108.64	45	\$38,550.00	15%	50%	\$3.56	0	0	BEST Simulation
Data Center	Heating	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Data Center bldg.	New	0.00	14	\$223,190.00	6%	75%	\$10.00	0	0	DEER
Data Center	Heating	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15,875.00	20%	65%	\$0.00	0	0	BEST Simulation
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	631.50	15	-\$27.87	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	805.15	15	\$220.77	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$52,150.00	5%	15%	\$10.00	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$3,265.00	15%	50%	\$10.00	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	12	\$20,000.00	3%	25%	\$10.00	0	0	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	16	\$2,060.00	1%	3%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$8,520.00	7%	45%	\$10.00	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	Existing	0.00	25	\$61,500.00	15%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$5,500.00	10%	25%	\$10.00	0	0	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	298.21	15	\$64.21	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	69.78	15	\$6.83	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$30,500.00	10%	75%	\$0.00	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	230.65	6	\$5.47	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	187.72	15	\$99.64	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	16,068.35	20	\$200,000.00	10%	15%	\$0.25	0	0	AEG research & analysis
Data Center	Interior Lighting	Commissioning	per 50,000 sqft Data Center bldg.	New	2,842.59	3	\$48,000.00	10%	75%	\$1.29	0	0	6th Plan
Data Center	Interior Lighting	Energy Management System	per 50,000 sqft Data Center bldg.	New	3,021.78	15	\$15,875.00	20%	65%	\$0.15	0	0	BEST Simulation
Data Center	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	631.50	15	-\$27.87	100%	at stock turnover	-\$0.02	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	805.15	15	\$220.77	100%	at stock turnover	\$0.01	0	0	EIA 2011
Data Center	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Data Center bldg.	New	19,140.10	5	\$52,150.00	5%	15%	\$1.70	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Data Center bldg.	New	30,154.40	5	\$3,265.00	15%	50%	\$0.08	0	0	Illinois TRM
Data Center	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Data Center bldg.	New	17,883.10	12	\$20,000.00	4%	25%	\$0.18	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Data Center bldg.	New	2,721.09	16	\$2,060.00	1%	3%	\$0.11	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	18,918.83	10	\$8,520.00	22%	45%	\$0.09	0	0	Ameren Missouri TRM
Data Center	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Data Center bldg.	New	0.00	25	\$61,500.00	18%	25%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Data Center bldg.	New	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Data Center	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Data Center bldg.	New	1,692.86	5	\$5,500.00	10%	25%	\$0.27	0	0	AEG research & analysis
Data Center	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	298.21	15	\$64.21	100%	at stock turnover	\$0.02	1	1	EIA 2011
Data Center	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	69.78	15	\$6.83	100%	at stock turnover	\$0.01	0	0	EIA 2011
Data Center	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Data Center bldg.	New	0.00	15	\$1,300.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Interior Lighting	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	230.65	6	\$5.47	100%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	187.72	15	\$99.64	100%	at stock turnover	\$0.03	0	0	EIA 2011
Data Center	Interior Lighting	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	6,759.64	7	\$6,985.00	1%	4%	\$0.11	0	0	Developed from RTF
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	Existing	98.97	7	\$155.00	1%	3%	\$0.30	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	Existing	4,834.05	10	\$975.00	1%	3%	\$0.03	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$18,860.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	Existing	784.37	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	Existing	140.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	7,719.16	7	\$6,985.00	1%	2%	\$0.21	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Data Center bldg.	New	113.03	7	\$10.00	1%	3%	\$0.33	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Data Center	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Data Center bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Data Center	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Data Center bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Data Center bldg.	New	39,467.25	15	\$18,860.00	15%	75%	\$0.30	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Heater - Heat Pump	per 50,000 sqft Data Center bldg.	New	784.37	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Data Center bldg.	New	140.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Data Center	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Data Center bldg.	New	0.00	5	\$300.00	15%	75%	\$10.00	0	0	AEG research & analysis
Data Center	Miscellaneous	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$500,000.00	10%	50%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$52,500.00	10%	15%	\$10.00	0	0	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	77,241.44	6	\$579.57	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$1,325.00	10%	50%	\$10.00	0	0	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	6,082.84	6	\$150.77	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	13,435.16	6	\$908.39	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$2,000.00	10%	25%	\$10.00	0	0	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	3,142.11	6	\$9.43	40%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	16,776.01	6	\$214.49	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	Existing	1,127,339.34	6	\$8,458.80	100%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Data Center	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Data Center bldg.	New	535,223.70	20	\$150,000.00	10%	50%	\$1.56	2	2	E3T Website
Data Center	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Data Center bldg.	New	1,083,757.67	3	\$52,500.00	10%	15%	\$0.98	0	1	E3T Website
Data Center	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	77,241.44	6	\$579.57	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Data Center bldg.	New	20,158.29	4	\$1,325.00	10%	50%	\$0.23	0	0	Developed from RTF
Data Center	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	6,082.84	6	\$150.77	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	13,435.16	6	\$908.39	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	59,555.10	5	\$2,000.00	10%	25%	\$0.10	0	0	5th Plan
Data Center	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	3,142.11	6	\$10.37	44%	at stock turnover	\$0.00	0	0	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	16,776.01	6	\$214.49	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Data Center	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Data Center bldg.	New	1,127,339.34	6	\$8,458.80	100%	at stock turnover	\$0.00	7	8	Assumed same as Desktop
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$13,155.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	Existing	292.31	9	\$1.68	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	Existing	6,160.00	9	\$530.00	0%	10%	\$0.01	0	0	PacifiCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	Existing	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$33,485.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$26,935.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	Existing	0.00	4	\$16,370.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	Existing	674.26	10	\$9.97	5%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Data Center bldg.	New	0.00	5	\$7,735.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Data Center bldg.	New	0.00	8	\$980.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Data Center bldg.	New	0.00	5	\$12,660.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Data Center bldg.	New	292.31	9	\$1.84	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Data Center bldg.	New	0.00	8	\$12,715.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Data Center bldg.	New	6,160.00	9	\$530.00	0%	10%	\$0.00	0	0	PacificCorp Program Data
Data Center	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Data Center bldg.	New	0.00	4	\$11,530.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Data Center bldg.	New	0.00	16	\$810.00	0%	0%	\$10.00	0	0	DEER
Data Center	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Data Center bldg.	New	0.00	15	\$33,485.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Data Center bldg.	New	0.00	15	\$26,935.00	0%	0%	\$10.00	0	0	AEO 2013
Data Center	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Data Center bldg.	New	0.00	4	\$16,370.00	0%	0%	\$10.00	0	0	Developed from RTF
Data Center	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Data Center bldg.	New	674.26	10	\$10.96	6%	at stock turnover	\$0.00	0	0	EIA 2011
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	Existing	-2,943.33	15	\$39,000.00	45%	50%	\$0.02	0	0	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	Existing	53,495.22	15	\$15,875.00	20%	65%	\$0.01	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	Existing	27,912.03	18	\$115.00	15%	50%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	Existing	-15,055.34	15	\$1,300.00	15%	75%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	Existing	62,187.42	50	\$125,000.00	15%	75%	\$0.06	0	0	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	Existing	39,380.31	45	\$63,135.00	15%	35%	\$0.05	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	Existing	-4,843.76	20	\$410.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	Existing	33,931.64	20	\$17,500.00	15%	50%	\$0.02	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	Existing	0.00	45	\$38,550.00	15%	35%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	Existing	63,157.54	3	\$30,500.00	10%	75%	\$0.06	0	0	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	Existing	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$835.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	Existing	16,122.11	15	\$11,000.00	15%	75%	\$0.07	0	0	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	Existing	157,986.21	18	\$8,500.00	15%	35%	\$0.01	0	0	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	Existing	690,714.04	20	\$701,809.05	100%	at stock turnover	\$0.11	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	Existing	460,348.25	15	\$8,525.00	13%	50%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$126,085.00	48%	48%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	186,731.10	20	\$200,000.00	10%	15%	\$0.25	0	0	AEG research & analysis
Data Center	Ventilation	Commissioning	per 50,000 sqft Data Center bldg.	New	39,022.76	3	\$48,000.00	10%	75%	\$1.29	0	0	6th Plan
Data Center	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Data Center bldg.	New	4,007.48	15	\$39,000.00	45%	50%	\$3.29	0	0	BEST Simulation
Data Center	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Data Center bldg.	New	0.00	10	\$7,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Data Center	Ventilation	Energy Management System	per 50,000 sqft Data Center bldg.	New	33,811.70	15	\$15,875.00	20%	65%	\$0.15	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Data Center bldg.	New	25,168.83	18	\$110.00	15%	35%	\$0.00	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Data Center bldg.	New	-9,885.78	15	\$1,300.00	15%	75%	\$0.09	0	0	BEST Simulation
Data Center	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Data Center bldg.	New	38,090.97	50	\$125,000.00	15%	75%	\$1.82	0	0	6th Plan
Data Center	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Data Center bldg.	New	11,341.85	45	\$63,135.00	15%	50%	\$0.63	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Data Center bldg.	New	6,819.25	20	\$410.00	15%	50%	\$0.03	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Data Center bldg.	New	21,157.50	20	\$17,500.00	15%	50%	\$0.35	0	0	BEST Simulation
Data Center	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Data Center bldg.	New	1,278.85	45	\$38,550.00	15%	50%	\$3.56	0	0	BEST Simulation
Data Center	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Ventilation	Retrocommissioning	per 50,000 sqft Data Center bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Data Center	Ventilation	Strategic Energy Management	per 50,000 sqft Data Center bldg.	New	0.00	3	\$15,875.00	0%	0%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Data Center bldg.	New	0.00	5	\$2,240.00	10%	10%	\$10.00	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Data Center bldg.	New	10,401.81	15	\$6,500.00	15%	75%	\$0.98	0	0	6th Plan
Data Center	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Data Center bldg.	New	100,533.50	18	\$8,500.00	15%	35%	\$0.13	0	0	DEER
Data Center	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Data Center bldg.	New	627,408.70	20	\$688,711.76	100%	at stock turnover	\$0.11	0	0	BEST Simulation
Data Center	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Data Center bldg.	New	296,302.65	15	\$8,525.00	19%	50%	\$0.05	1	1	BEST Simulation
Data Center	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Data Center bldg.	New	0.00	20	\$126,085.00	66%	66%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$9,000.00	3%	75%	\$10.00	0	0	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	Existing	0.00	7	\$6,985.00	1%	4%	\$0.00	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$5,585.00	1%	7%	\$10.00	0	0	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$2,000.00	1%	10%	\$10.00	0	0	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$550.00	25%	65%	\$10.00	0	0	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$575.00	15%	75%	\$10.00	0	0	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$15.00	15%	75%	\$10.00	0	0	DEER
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	Existing	0.00	15	\$6,985.00	16%	75%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	Existing	0.00	20	\$62,500.00	1%	30%	\$10.00	0	0	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	Existing	659.90	13	\$34.56	40%	at stock turnover	\$0.00	0	0	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	Existing	0.00	5	\$9,000.00	3%	75%	\$10.00	0	0	AEG study for PN&L
Data Center	Water Heating	Advanced New Construction Designs	per 50,000 sqft Data Center bldg.	New	8,982.99	20	\$200,000.00	10%	15%	\$0.25	0	0	AEG research & analysis
Data Center	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	2,789.08	5	\$9,000.00	6%	75%	\$0.49	0	0	AEG study for PN&L
Data Center	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Data Center bldg.	New	3,843.64	7	\$6,985.00	1%	2%	\$0.21	0	0	Developed from RTF
Data Center	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Data Center bldg.	New	16,355.26	20	\$5,585.00	1%	8%	\$0.02	0	0	Developed from RTF (Residential)
Data Center	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Data Center bldg.	New	3,014.07	5	\$2,000.00	0%	75%	\$0.11	0	0	AEG study for LA Dept of Water & Power
Data Center	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Data Center bldg.	New	7,928.18	5	\$550.00	25%	65%	\$0.01	0	0	DEER
Data Center	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Data Center bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Data Center	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Data Center bldg.	New	1,015.93	15	\$575.00	15%	75%	\$0.05	0	0	Hawaii TRM
Data Center	Water Heating	Water Heater - Install Timer	per 50,000 sqft Data Center bldg.	New	147.24	15	\$15.00	15%	75%	\$0.01	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Data Center	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Data Center bldg.	New	1,805.56	15	\$6,985.00	1%	75%	\$0.29	0	0	BEST Simulation
Data Center	Water Heating	Water Heater - Solar System	per 50,000 sqft Data Center bldg.	New	5,721.56	20	\$62,500.00	1%	30%	\$0.65	0	0	BEST Simulation
Data Center	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Data Center bldg.	New	659.90	13	\$34.56	40%	at stock turnover	\$0.01	0	0	BEST Simulation
Data Center	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Data Center bldg.	New	2,682.56	5	\$9,000.00	6%	75%	\$0.49	0	0	AEG study for PN&L
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	28,859.81	23	\$537,400.93	2%	at stock turnover	\$0.03	10	9	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	Existing	14,467.55	23	\$4,830.10	6%	at stock turnover	\$0.03	39	39	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	11,861.96	10	\$814.00	15%	75%	\$0.01	31	34	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	1,696.82	15	\$2,156.00	15%	75%	\$0.13	4	5	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	Existing	590.43	15	\$1,866.00	15%	75%	\$0.29	1	2	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	11,905.01	15	\$15,600.00	45%	50%	\$0.26	36	41	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	De-stratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	Existing	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	1,984.53	10	\$3,000.00	15%	35%	\$0.07	25	27	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	3,340.23	15	\$6,350.00	20%	65%	\$0.05	96	103	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	Existing	6,451.64	15	\$58,734.02	10%	at stock turnover	\$1.12	37	35	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	10,017.32	23	\$255,556.80	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	166.69	18	\$50.00	15%	25%	\$0.01	1	1	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	Existing	13,774.85	10	\$15,330.00	18%	75%	\$0.15	200	496	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	3,496.91	50	\$50,000.00	15%	25%	\$0.69	21	26	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	12,837.67	45	\$25,254.00	15%	35%	\$0.15	161	175	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	3,292.44	45	\$13,856.00	15%	35%	\$0.12	41	45	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	2,117.44	20	\$7,000.00	15%	50%	\$0.09	47	51	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	-2,204.55	45	\$15,420.00	15%	35%	\$0.08	-28	-30	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	Existing	11,413.56	15	\$7,715.41	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	3,556.40	3	\$12,200.00	10%	75%	\$0.27	138	158	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	Existing	8,683.49	23	\$106,035.64	74%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$67,414.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	2,598.13	3	\$6,350.00	4%	27%	\$0.16	36	48	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	Existing	23,192.80	23	\$7,308.16	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$2,156.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$9,912.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	10,930.87	20	\$80,000.00	10%	15%	\$0.10	12	13	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	19,660.54	23	\$446,725.52	2%	at stock turnover	\$0.03	4	4	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 20,000 sqft Grocery bldg.	New	13,060.22	23	\$4,316.56	7%	at stock turnover	\$0.03	23	24	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	9,808.94	10	\$814.00	15%	75%	\$0.01	9	9	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	1,371.23	15	\$2,156.00	15%	75%	\$0.15	1	1	BEST Simulation
Grocery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$1,866.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Commissioning	per 20,000 sqft Grocery bldg.	New	2,131.83	3	\$19,200.00	10%	75%	\$0.49	31	32	6th Plan
Grocery	Cooling	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	4,882.48	15	\$15,600.00	45%	50%	\$0.49	6	6	BEST Simulation
Grocery	Cooling	Data Center - Air Flow Optimization and Commissioning	per 20,000 sqft Grocery bldg.	New	0.00	15	\$42,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Cooling	Destratification Fans (HVLS)	per 20,000 sqft Grocery bldg.	New	0.00	12	\$9,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Grocery	Cooling	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	1,186.98	10	\$3,000.00	15%	50%	\$0.09	9	10	AEG research & analysis
Grocery	Cooling	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$3,572.00	15%	25%	\$0.00	0	0	Developed from RTF
Grocery	Cooling	Energy Management System	per 20,000 sqft Grocery bldg.	New	2,006.14	15	\$6,350.00	20%	65%	\$0.06	21	21	BEST Simulation
Grocery	Cooling	Evaporative Cooling - Indirect/Direct	per 20,000 sqft Grocery bldg.	New	6,451.64	15	\$64,607.43	11%	at stock turnover	\$1.23	19	17	PacifiCorp Program Data
Grocery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	4,737.26	23	\$212,436.82	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	HVAC - Chilled Water Pipe Insulation	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	184.24	18	\$78.00	15%	25%	\$0.02	0	0	BEST Simulation
Grocery	Cooling	HVAC - Economizer	per 20,000 sqft Grocery bldg.	New	7,880.94	10	\$15,330.00	18%	75%	\$0.27	16	90	DEER
Grocery	Cooling	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	2,049.17	50	\$50,000.00	15%	25%	\$1.07	5	5	6th Plan
Grocery	Cooling	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	1,796.63	45	\$25,254.00	15%	50%	\$0.55	14	14	BEST Simulation
Grocery	Cooling	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	1,935.11	45	\$13,856.00	15%	50%	\$0.14	15	16	BPA
Grocery	Cooling	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	1,257.92	20	\$7,000.00	15%	50%	\$0.10	10	10	BEST Simulation
Grocery	Cooling	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	-24.55	45	\$15,420.00	15%	50%	\$0.59	0	0	BEST Simulation
Grocery	Cooling	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	PTAC - EER 12.2	per 20,000 sqft Grocery bldg.	New	10,033.14	15	\$7,325.04	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Cooling	RTU - EER 10.1	per 20,000 sqft Grocery bldg.	New	5,638.16	23	\$88,144.30	85%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	RTU - Evaporative Precooler	per 20,000 sqft Grocery bldg.	New	0.00	15	\$67,414.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Cooling	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,656.27	3	\$6,350.00	4%	27%	\$0.19	11	11	BEST Simulation
Grocery	Cooling	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 20,000 sqft Grocery bldg.	New	21,146.33	23	\$6,531.14	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Grocery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 20,000 sqft Grocery bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 20,000 sqft Grocery bldg.	New	0.00	15	\$2,156.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 20,000 sqft Grocery bldg.	New	0.00	15	\$9,912.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Cooling	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	245.47	15	\$6,350.00	20%	65%	\$0.05	16	25	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	663.15	5	\$3,928.00	15%	25%	\$1.00	9	18	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	313.26	10	\$3,458.00	33%	60%	\$1.13	12	24	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	Existing	3,892.89	10	\$5,414.00	15%	30%	\$0.16	85	157	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	308.52	15	-\$7.33	100%	at stock turnover	-\$0.01	2	2	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	393.36	15	\$58.08	100%	at stock turnover	\$0.01	442	410	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	80.70	15	\$39.83	100%	at stock turnover	\$0.03	200	194	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	17.51	15	\$0.92	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	223.83	3	\$12,200.00	10%	75%	\$0.27	20	33	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	51.26	6	\$0.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	41.72	15	\$11.92	100%	at stock turnover	\$0.02	74	85	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	195.37	3	\$6,350.00	4%	27%	\$0.16	6	14	BEST Simulation
Grocery	Exterior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	1,185.77	20	\$80,000.00	10%	15%	\$0.10	3	4	AEG research & analysis
Grocery	Exterior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	193.20	3	\$19,200.00	10%	75%	\$0.49	6	8	6th Plan
Grocery	Exterior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	214.67	15	\$6,350.00	20%	65%	\$0.06	4	7	BEST Simulation
Grocery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	568.30	5	\$3,928.00	15%	25%	\$1.08	3	4	Illinois TRM
Grocery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	168.16	10	\$3,458.00	44%	60%	\$1.94	1	2	AEG research & analysis
Grocery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 20,000 sqft Grocery bldg.	New	3,359.23	10	\$5,414.00	15%	30%	\$0.17	23	34	AEG research & analysis
Grocery	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	308.52	15	-\$7.33	100%	at stock turnover	-\$0.01	1	1	EIA 2011
Grocery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	393.36	15	\$58.08	100%	at stock turnover	\$0.01	180	168	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	80.70	15	\$39.83	100%	at stock turnover	\$0.03	83	81	EIA 2011
Grocery	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	17.51	15	\$0.92	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Exterior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	51.26	6	\$0.66	100%	at stock turnover	\$0.00	0	0	EIA 2011
Grocery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	41.72	15	\$11.92	100%	at stock turnover	\$0.02	33	35	EIA 2011
Grocery	Exterior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	168.64	3	\$6,350.00	4%	27%	\$0.19	2	3	BEST Simulation
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	17,343.58	15	\$243.59	55%	at stock turnover	\$0.00	168	165	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	1,767.60	10	\$287.65	61%	at stock turnover	\$0.02	67	58	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	2,996.62	18	\$1,098.00	55%	at stock turnover	\$0.04	22	22	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	3,182.50	10	\$577.38	54%	at stock turnover	\$0.03	72	62	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Food Preparation	Dishwasher - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	17,343.58	15	\$341.02	77%	at stock turnover	\$0.00	110	105	Illinois TRM
Grocery	Food Preparation	Fryer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	1,767.60	10	\$402.71	85%	at stock turnover	\$0.03	37	34	Developed from RTF "ComCookingConvectionFryer" v2.0
Grocery	Food Preparation	Hot Food Container - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	2,996.62	18	\$1,537.20	77%	at stock turnover	\$0.06	12	12	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Grocery	Food Preparation	Oven - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	3,182.50	10	\$808.34	76%	at stock turnover	\$0.04	40	36	Developed from RTF "ComCookingConvectionOven" v2.0
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	Existing	4,993.24	23	\$8,719.60	2%	at stock turnover	\$0.03	2	1	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	-6,109.04	15	\$15,600.00	45%	50%	\$0.26	-2	-2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	3,894.08	10	\$3,000.00	15%	35%	\$0.08	6	6	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	Existing	51,929.53	15	\$3,572.00	15%	25%	\$0.01	4	4	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	6,555.80	15	\$6,350.00	20%	65%	\$0.05	22	22	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	Existing	10,534.64	23	\$7,265.20	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	83.01	18	\$50.00	15%	25%	\$0.01	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	1,380.76	45	\$25,254.00	15%	35%	\$0.15	2	2	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	Existing	6,350.15	45	\$13,856.00	15%	35%	\$0.12	9	10	BPA
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	4,983.16	20	\$7,000.00	15%	50%	\$0.09	13	13	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	18,985.01	45	\$15,420.00	15%	35%	\$0.08	28	29	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	7,526.54	3	\$12,200.00	10%	75%	\$0.27	36	37	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	Existing	0.00	14	\$93,576.00	3%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	5,469.72	3	\$6,350.00	4%	27%	\$0.16	9	10	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	34,952.59	20	\$80,000.00	10%	15%	\$0.10	4	4	AEG research & analysis
Grocery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 20,000 sqft Grocery bldg.	New	4,415.01	23	\$7,473.76	2%	at stock turnover	\$0.03	1	1	BEST Simulation
Grocery	Heating	Commissioning	per 20,000 sqft Grocery bldg.	New	7,286.18	3	\$19,200.00	10%	75%	\$0.49	11	11	6th Plan
Grocery	Heating	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	-1,852.73	15	\$15,600.00	45%	50%	\$0.49	0	0	BEST Simulation
Grocery	Heating	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	3,801.34	10	\$3,000.00	15%	50%	\$0.09	3	3	AEG research & analysis
Grocery	Heating	Ductless Mini Split Heat Pump	per 20,000 sqft Grocery bldg.	New	51,929.53	15	\$3,572.00	15%	25%	\$0.01	1	1	Developed from RTF
Grocery	Heating	Energy Management System	per 20,000 sqft Grocery bldg.	New	6,424.81	15	\$6,350.00	20%	65%	\$0.06	6	6	BEST Simulation
Grocery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 20,000 sqft Grocery bldg.	New	8,458.50	23	\$6,039.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Grocery	Heating	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	73.10	18	\$78.00	15%	25%	\$0.02	0	0	BEST Simulation
Grocery	Heating	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	1,723.32	45	\$25,254.00	15%	50%	\$0.55	1	1	BEST Simulation
Grocery	Heating	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Insulation - Foundation - R-10	per 20,000 sqft Grocery bldg.	New	6,187.67	45	\$13,856.00	15%	50%	\$0.14	5	5	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Heating	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	4,909.73	20	\$7,000.00	15%	50%	\$0.10	4	4	BEST Simulation
Grocery	Heating	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	2,103.44	45	\$15,420.00	15%	50%	\$0.59	2	2	BEST Simulation
Grocery	Heating	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Heating	Space Heating - Heat Recovery Ventilator	per 20,000 sqft Grocery bldg.	New	0.00	14	\$93,576.00	6%	75%	\$10.00	0	0	DEER
Grocery	Heating	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	5,300.74	3	\$6,350.00	4%	27%	\$0.19	4	4	BEST Simulation
Grocery	Heating	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Heating	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,948.71	15	\$6,350.00	20%	65%	\$0.05	119	196	BEST Simulation
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,040.51	15	-\$24.73	100%	at stock turnover	-\$0.01	5	7	EIA 2011
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,326.64	15	\$195.87	100%	at stock turnover	\$0.01	1,322	1,228	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	Existing	10,540.93	5	\$22,118.00	5%	15%	\$0.33	46	100	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	Existing	16,882.22	5	\$1,550.00	15%	50%	\$0.02	281	533	Illinois TRM
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	Existing	11,593.61	12	\$8,000.00	3%	25%	\$0.06	337	709	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	Existing	1,754.99	16	\$976.00	1%	3%	\$0.04	5	11	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	12,565.19	10	\$4,042.00	7%	45%	\$0.03	465	1,329	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	Existing	0.00	25	\$24,600.00	15%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 20,000 sqft Grocery bldg.	Existing	0.00	8	\$4,496.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	Existing	1,400.03	5	\$2,200.00	10%	25%	\$0.20	8	22	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	Existing	302.61	15	\$149.35	100%	at stock turnover	\$0.03	4,226	4,089	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	65.67	15	\$3.46	100%	at stock turnover	\$0.01	0	1	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,842.07	3	\$12,200.00	10%	75%	\$0.27	157	268	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	261.15	6	\$3.34	100%	at stock turnover	\$0.00	0	4	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	212.55	15	\$60.75	100%	at stock turnover	\$0.02	1,124	1,283	EIA 2011
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,609.42	3	\$6,350.00	4%	27%	\$0.16	49	126	BEST Simulation
Grocery	Interior Lighting	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	9,178.19	20	\$80,000.00	10%	15%	\$0.10	20	31	AEG research & analysis
Grocery	Interior Lighting	Commissioning	per 20,000 sqft Grocery bldg.	New	1,601.61	3	\$19,200.00	10%	75%	\$0.49	46	70	6th Plan
Grocery	Interior Lighting	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,724.95	15	\$6,350.00	20%	65%	\$0.06	34	52	BEST Simulation
Grocery	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,040.51	15	-\$24.73	100%	at stock turnover	-\$0.01	3	4	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,326.64	15	\$195.87	100%	at stock turnover	\$0.01	539	502	EIA 2011
Grocery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 20,000 sqft Grocery bldg.	New	9,265.78	5	\$22,118.00	5%	15%	\$0.36	14	21	Illinois TRM
Grocery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 20,000 sqft Grocery bldg.	New	14,394.01	5	\$1,550.00	15%	50%	\$0.02	76	114	Illinois TRM
Grocery	Interior Lighting	Interior Lighting - Daylighting Controls	per 20,000 sqft Grocery bldg.	New	10,210.04	12	\$8,000.00	4%	25%	\$0.07	93	141	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - LED Exit Lighting	per 20,000 sqft Grocery bldg.	New	1,553.29	16	\$976.00	1%	3%	\$0.05	1	2	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	10,794.29	10	\$4,042.00	22%	45%	\$0.04	51	165	Ameren Missouri TRM
Grocery	Interior Lighting	Interior Lighting - Skylights	per 20,000 sqft Grocery bldg.	New	0.00	25	\$24,600.00	18%	75%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 20,000 sqft Grocery bldg.	New	0.00	8	\$4,496.00	7%	15%	\$10.00	0	0	DEER
Grocery	Interior Lighting	Interior Screw-in - Task Lighting	per 20,000 sqft Grocery bldg.	New	1,196.58	5	\$2,200.00	10%	25%	\$0.22	2	4	AEG research & analysis
Grocery	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - LED (91 lm/W)	Lamp	New	302.61	15	\$149.35	100%	at stock turnover	\$0.03	1,752	1,715	EIA 2011
Grocery	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	65.67	15	\$3.46	100%	at stock turnover	\$0.01	0	0	EIA 2011
Grocery	Interior Lighting	Lodging - Guest Room Controls	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Grocery	Interior Lighting	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	261.15	6	\$3.34	100%	at stock turnover	\$0.00	0	4	EIA 2011
Grocery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	212.55	15	\$60.75	100%	at stock turnover	\$0.02	506	531	EIA 2011
Grocery	Interior Lighting	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,407.48	3	\$6,350.00	4%	27%	\$0.19	19	28	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	98.09	7	\$1,398.00	1%	4%	\$0.78	0	0	Developed from RTF
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	Existing	1.44	7	\$30.00	1%	3%	\$3.98	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	Existing	70.15	10	\$194.00	1%	3%	\$0.41	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	Existing	0.00	13	\$0.00	35%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	Existing	1,604.67	15	\$10,756.00	15%	75%	\$0.80	25	25	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	Existing	313.75	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	Existing	56.30	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,613.26	3	\$6,350.00	4%	27%	\$0.16	44	43	BEST Simulation
Grocery	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	56.05	7	\$1,398.00	1%	2%	\$1.36	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Miscellaneous	ENERGY STAR Battery Chargers	per 20,000 sqft Grocery bldg.	New	0.82	7	\$2.00	1%	3%	\$0.46	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Grocery	Miscellaneous	ENERGY STAR Water Cooler	per 20,000 sqft Grocery bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Grocery	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 20,000 sqft Grocery bldg.	New	0.00	13	\$0.00	42%	at stock turnover	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 20,000 sqft Grocery bldg.	New	1,604.67	15	\$10,756.00	15%	75%	\$0.80	9	9	AEG research & analysis
Grocery	Miscellaneous	Pool Heater - Heat Pump	per 20,000 sqft Grocery bldg.	New	313.75	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Pool Pump - High Efficiency	per 20,000 sqft Grocery bldg.	New	56.30	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Grocery	Miscellaneous	Pool Pump - Timer	per 20,000 sqft Grocery bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Grocery	Miscellaneous	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,561.66	3	\$6,350.00	4%	27%	\$0.19	17	17	BEST Simulation
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	745.00	6	\$5.59	100%	at stock turnover	\$0.00	19	20	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	Existing	16.21	4	\$530.00	10%	50%	\$9.00	3	3	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	146.67	6	\$2.33	64%	at stock turnover	\$0.00	3	3	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	129.58	6	\$8.76	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	47.62	5	\$800.00	10%	25%	\$3.88	3	4	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	378.83	6	\$2.84	100%	at stock turnover	\$0.00	18	19	Assumed same as Desktop
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	161.81	6	\$2.07	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	Existing	543.67	6	\$4.08	100%	at stock turnover	\$0.00	36	37	Assumed same as Desktop
Grocery	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 20,000 sqft Grocery bldg.	New	0.00	20	\$60,000.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Data Center - Server Virtualization	per 20,000 sqft Grocery bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Grocery	Office Equipment	Desktop Computer - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	745.00	6	\$5.59	100%	at stock turnover	\$0.00	7	8	ENERGY STAR Calculator
Grocery	Office Equipment	Electronics - Smart Power Strips	per 20,000 sqft Grocery bldg.	New	15.53	4	\$926.00	10%	50%	\$16.26	1	1	Developed from RTF
Grocery	Office Equipment	Laptop - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	146.67	6	\$2.56	70%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Monitor - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	129.58	6	\$8.76	100%	at stock turnover	\$0.01	1	1	ENERGY STAR Calculator
Grocery	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	26.07	5	\$800.00	10%	25%	\$7.02	1	1	5th Plan
Grocery	Office Equipment	POS Terminal - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	378.83	6	\$2.84	100%	at stock turnover	\$0.00	7	7	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	161.81	6	\$2.07	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Grocery	Office Equipment	Server - ENERGY STAR	per 20,000 sqft Grocery bldg.	New	543.67	6	\$4.08	100%	at stock turnover	\$0.00	12	12	Assumed same as Desktop
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	Existing	47,701.97	5	\$2,632.00	10%	75%	\$0.25	4,350	4,439	Developed from RTF
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	Existing	284.96	8	\$196.00	10%	75%	\$0.11	26	27	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	Existing	8,264.42	5	\$2,532.00	10%	75%	\$0.07	379	382	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	Existing	939.83	9	\$104.54	99%	at stock turnover	\$0.02	69	63	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	Existing	7,830.77	8	\$2,542.00	25%	75%	\$0.06	277	277	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	Existing	1,232.00	9	\$106.00	0%	75%	\$0.01	57	57	PacifiCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	Existing	0.00	4	\$2,306.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	Existing	0.00	16	\$162.00	25%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	Existing	5,240.92	15	\$2,464.00	14%	75%	\$0.06	1,161	1,160	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	Existing	10,314.24	15	\$5,386.00	25%	75%	\$0.06	1,859	1,884	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	Existing	7,461.18	4	\$2,220.00	25%	75%	\$0.08	44	45	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	Existing	4,335.77	10	\$1,242.86	99%	at stock turnover	\$0.08	219	193	EIA 2011
Grocery	Refrigeration	Grocery - Display Case - LED Lighting	per 20,000 sqft Grocery bldg.	New	48,420.45	5	\$1,548.00	10%	75%	\$0.26	1,324	1,324	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Refrigeration	Grocery - Display Case Motion Sensors	per 20,000 sqft Grocery bldg.	New	166.32	8	\$196.00	10%	75%	\$0.19	5	5	Developed from RTF
Grocery	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 20,000 sqft Grocery bldg.	New	8,471.52	5	\$2,532.00	10%	75%	\$0.07	116	116	DEER
Grocery	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 20,000 sqft Grocery bldg.	New	939.83	9	\$105.70	100%	at stock turnover	\$0.02	27	25	EIA 2011
Grocery	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 20,000 sqft Grocery bldg.	New	4,228.34	8	\$2,542.00	35%	75%	\$0.10	36	36	Developed from RTF
Grocery	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 20,000 sqft Grocery bldg.	New	1,232.00	9	\$106.00	0%	75%	\$0.01	17	17	PacificCorp Program Data
Grocery	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 20,000 sqft Grocery bldg.	New	0.00	4	\$2,306.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Evaporator Fan Controls	per 20,000 sqft Grocery bldg.	New	0.00	16	\$162.00	35%	75%	\$10.00	0	0	DEER
Grocery	Refrigeration	Refrigeration - Floating Head Pressure	per 20,000 sqft Grocery bldg.	New	5,306.49	15	\$2,464.00	0%	75%	\$0.06	429	431	Developed from RTF
Grocery	Refrigeration	Refrigeration - High Efficiency Compressor	per 20,000 sqft Grocery bldg.	New	10,404.15	15	\$5,386.00	35%	75%	\$0.06	448	450	AEO 2013
Grocery	Refrigeration	Refrigeration - Strip Curtain	per 20,000 sqft Grocery bldg.	New	7,505.23	4	\$2,220.00	35%	75%	\$0.08	11	11	Developed from RTF
Grocery	Refrigeration	Vending Machine - 1,820 kWh/yr	per 20,000 sqft Grocery bldg.	New	4,335.77	10	\$1,256.68	100%	at stock turnover	\$0.08	109	101	EIA 2011
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	Existing	0.00	3	\$19,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$15,600.00	45%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	Existing	0.00	10	\$3,000.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	Existing	1,652.59	15	\$6,350.00	20%	65%	\$0.05	52	55	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	Existing	332.76	18	\$50.00	15%	25%	\$0.01	2	3	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	Existing	1,807.89	50	\$50,000.00	15%	25%	\$0.70	12	15	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	Existing	0.00	45	\$25,254.00	15%	35%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$164.00	15%	35%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	Existing	993.12	20	\$7,000.00	15%	50%	\$0.09	23	26	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	Existing	292.23	45	\$15,420.00	15%	35%	\$0.08	4	4	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	Existing	1,838.41	3	\$12,200.00	10%	75%	\$0.27	78	89	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	Existing	1,337.39	3	\$6,350.00	4%	27%	\$0.16	20	26	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	Existing	0.00	5	\$166.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	Existing	477.26	15	\$4,400.00	15%	75%	\$0.99	18	21	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	Existing	4,592.17	18	\$3,400.00	15%	35%	\$0.08	61	68	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	Existing	7,341.61	20	\$16,360.97	100%	at stock turnover	\$0.23	80	81	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	Existing	8,012.10	15	\$3,574.00	13%	50%	\$0.05	203	219	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$17,106.00	48%	48%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	6,718.39	20	\$80,000.00	10%	15%	\$0.10	7	7	AEG research & analysis
Grocery	Ventilation	Commissioning	per 20,000 sqft Grocery bldg.	New	1,415.84	3	\$19,200.00	10%	75%	\$0.49	20	20	6th Plan
Grocery	Ventilation	Cool Roofs - Absorbptivity 0.2	per 20,000 sqft Grocery bldg.	New	0.00	15	\$15,600.00	45%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Doors - High Efficiency - R-5	per 20,000 sqft Grocery bldg.	New	0.00	10	\$3,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Grocery	Ventilation	Energy Management System	per 20,000 sqft Grocery bldg.	New	1,301.13	15	\$6,350.00	20%	65%	\$0.06	13	13	BEST Simulation
Grocery	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 20,000 sqft Grocery bldg.	New	262.18	18	\$78.00	15%	25%	\$0.02	1	1	BEST Simulation
Grocery	Ventilation	HVAC - Occupancy Sensors	per 20,000 sqft Grocery bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 20,000 sqft Grocery bldg.	New	1,373.25	50	\$50,000.00	15%	25%	\$1.07	3	3	6th Plan
Grocery	Ventilation	Insulation - Ceiling - R-38	per 20,000 sqft Grocery bldg.	New	0.00	45	\$25,254.00	15%	50%	\$0.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Ducting - R-8	per 20,000 sqft Grocery bldg.	New	0.00	20	\$164.00	15%	25%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Insulation - Radiant Barrier - R-5	per 20,000 sqft Grocery bldg.	New	773.14	20	\$7,000.00	15%	50%	\$0.10	6	6	BEST Simulation
Grocery	Ventilation	Insulation - Wall Cavity - R-23	per 20,000 sqft Grocery bldg.	New	47.45	45	\$15,420.00	15%	50%	\$0.59	0	0	BEST Simulation
Grocery	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Ventilation	Retrocommissioning	per 20,000 sqft Grocery bldg.	New	0.00	3	\$12,200.00	0%	0%	\$10.00	0	0	6th Plan
Grocery	Ventilation	Strategic Energy Management	per 20,000 sqft Grocery bldg.	New	1,030.01	3	\$6,350.00	4%	27%	\$0.19	7	7	BEST Simulation
Grocery	Ventilation	Thermostat - Clock/Programmable	per 20,000 sqft Grocery bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Grocery	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 20,000 sqft Grocery bldg.	New	366.05	15	\$2,600.00	15%	75%	\$0.74	5	5	6th Plan
Grocery	Ventilation	Ventilation - ECM on VAV Boxes	per 20,000 sqft Grocery bldg.	New	3,591.98	18	\$3,400.00	15%	35%	\$0.10	16	16	DEER
Grocery	Ventilation	Ventilation - Variable Air Volume	per 20,000 sqft Grocery bldg.	New	5,742.61	20	\$14,756.14	100%	at stock turnover	\$0.27	16	17	BEST Simulation
Grocery	Ventilation	Ventilation - Variable Speed Control	per 20,000 sqft Grocery bldg.	New	5,621.51	15	\$3,574.00	19%	50%	\$0.07	38	38	BEST Simulation
Grocery	Ventilation	Windows - High Efficiency - U-0.35 Window	per 20,000 sqft Grocery bldg.	New	0.00	20	\$17,106.00	66%	66%	\$10.00	0	0	BEST Simulation
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$80,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	3,121.09	5	\$3,600.00	3%	75%	\$0.26	82	86	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	Existing	196.48	7	\$1,398.00	1%	4%	\$0.78	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	Existing	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	3,208.37	5	\$800.00	1%	10%	\$0.06	11	11	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	Existing	8,285.57	5	\$1,876.00	25%	65%	\$0.06	46	124	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	Existing	0.00	15	\$1,018.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	Existing	16.47	15	\$6.00	15%	75%	\$0.04	0	0	DEER
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	Existing	2,006.83	15	\$1,976.00	16%	75%	\$0.11	44	45	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	Existing	6,361.81	20	\$25,000.00	1%	30%	\$0.34	65	72	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	Existing	688.60	13	\$32.96	50%	at stock turnover	\$0.01	18	17	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	Existing	2,988.86	5	\$3,600.00	3%	75%	\$0.26	78	83	AEG study for PN&L
Grocery	Water Heating	Advanced New Construction Designs	per 20,000 sqft Grocery bldg.	New	9,675.10	20	\$80,000.00	10%	15%	\$0.10	5	5	AEG research & analysis
Grocery	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	3,003.99	5	\$3,600.00	6%	75%	\$0.26	23	23	AEG study for PN&L
Grocery	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 20,000 sqft Grocery bldg.	New	109.67	7	\$1,398.00	1%	2%	\$1.36	0	0	Developed from RTF
Grocery	Water Heating	Water Heater - Desuperheater	per 20,000 sqft Grocery bldg.	New	0.00	20	\$1,118.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Grocery	Water Heating	Water Heater - Drainwater Heat Recovery	per 20,000 sqft Grocery bldg.	New	3,244.96	5	\$800.00	0%	75%	\$0.06	27	27	AEG study for LA Dept of Water & Power
Grocery	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 20,000 sqft Grocery bldg.	New	8,266.95	5	\$1,876.00	25%	65%	\$0.06	14	36	DEER
Grocery	Water Heating	Water Heater - Faucet Motion Sensor Control	per 20,000 sqft Grocery bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Grocery	Water Heating	Water Heater - High Efficiency Circulation Pump	per 20,000 sqft Grocery bldg.	New	0.00	15	\$1,018.00	0%	0%	\$10.00	0	0	Hawaii TRM
Grocery	Water Heating	Water Heater - Install Timer	per 20,000 sqft Grocery bldg.	New	8.55	15	\$6.00	15%	75%	\$0.08	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Grocery	Water Heating	Water Heater - Pipe Insulation	per 20,000 sqft Grocery bldg.	New	1,939.03	15	\$1,976.00	1%	75%	\$0.11	16	16	BEST Simulation
Grocery	Water Heating	Water Heater - Solar System	per 20,000 sqft Grocery bldg.	New	6,175.08	20	\$25,000.00	1%	30%	\$0.34	19	19	BEST Simulation
Grocery	Water Heating	Water Heating - EF 0.89	per 20,000 sqft Grocery bldg.	New	688.53	13	\$32.13	50%	at stock turnover	\$0.01	8	7	BEST Simulation
Grocery	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 20,000 sqft Grocery bldg.	New	2,889.04	5	\$3,600.00	6%	75%	\$0.26	22	22	AEG study for PN&L
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	59,879.35	23	\$92,934.04	1%	at stock turnover	\$0.04	23	22	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	Existing	37,236.16	23	\$20,861.93	17%	at stock turnover	\$0.06	230	232	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	30,569.57	10	\$813.00	15%	75%	\$0.00	318	352	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	9,558.76	15	\$1,281.00	15%	75%	\$0.01	97	113	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	Existing	954.96	15	\$3,243.00	15%	75%	\$0.31	9	12	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	6,340.79	15	\$11,700.00	45%	50%	\$0.35	27	34	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	Destratification Fans (HVLS)	per 30,000 sqft Health bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	4,677.90	10	\$4,500.00	15%	35%	\$0.03	85	100	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	44,501.96	15	\$3,573.00	15%	25%	\$0.00	2	2	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	Existing	7,848.65	15	\$9,525.00	20%	65%	\$0.03	324	377	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	Existing	14,616.84	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	52,715.00	23	\$76,397.15	1%	at stock turnover	\$0.03	20	20	BEST Simulation
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	2,363.15	18	\$85,947.00	15%	50%	\$5.16	71	101	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	Existing	30,653.35	10	\$26,646.00	18%	75%	\$0.11	730	2,033	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	8,371.43	50	\$75,000.00	15%	25%	\$0.33	72	102	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	2,286.74	45	\$37,881.00	15%	35%	\$0.17	39	49	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	8,856.50	20	\$246.00	15%	35%	\$0.01	167	189	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	7,740.71	45	\$20,784.00	15%	35%	\$0.06	140	165	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	4,977.27	20	\$10,500.00	15%	50%	\$0.04	158	186	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	-5,195.61	45	\$23,130.00	15%	35%	\$0.03	-94	-111	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	Existing	25,858.57	15	\$17,480.06	0%	at stock turnover	\$0.08	10	9	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	8,529.66	3	\$18,300.00	10%	75%	\$0.13	485	592	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	Existing	46,833.01	23	\$95,352.40	11%	at stock turnover	\$0.21	77	77	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	Existing	0.00	15	\$117,165.00	15%	75%	\$10.00	0	0	DEER
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	6,675.58	3	\$9,525.00	4%	28%	\$0.08	144	210	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	Existing	68,165.64	23	\$31,565.00	69%	at stock turnover	\$0.05	208	208	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	Existing	18,032.20	10	\$813.00	15%	75%	\$0.01	705	860	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	Existing	25,925.08	4	\$813.00	15%	75%	\$0.01	996	1,252	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	Existing	13,645.70	15	\$1,281.00	15%	75%	\$0.01	514	671	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	Existing	973.55	15	\$5,895.00	15%	75%	\$0.52	34	50	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Cooling	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	31,276.25	20	\$120,000.00	10%	25%	\$0.05	208	220	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	62,583.88	23	\$73,153.47	1%	at stock turnover	\$0.03	20	19	BEST Simulation
Health	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft Health bldg.	New	28,259.98	23	\$14,013.90	19%	at stock turnover	\$0.05	149	151	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	19,626.87	10	\$813.00	15%	75%	\$0.01	94	96	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	6,862.53	15	\$1,281.00	15%	75%	\$0.02	33	34	BEST Simulation
Health	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$3,243.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Commissioning	per 30,000 sqft Health bldg.	New	6,398.76	3	\$28,800.00	10%	75%	\$0.25	183	194	6th Plan
Health	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	50%	\$10.00	0	0	BEST Simulation
Health	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft Health bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Cooling	Destratification Fans (HVLS)	per 30,000 sqft Health bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Health	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	3,395.76	10	\$4,500.00	15%	50%	\$0.04	53	56	AEG research & analysis
Health	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	36,256.79	15	\$3,573.00	15%	25%	\$0.00	1	1	Developed from RTF
Health	Cooling	Energy Management System	per 30,000 sqft Health bldg.	New	5,738.31	15	\$9,525.00	20%	65%	\$0.03	114	121	BEST Simulation
Health	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft Health bldg.	New	14,616.84	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Health	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	55,159.46	23	\$60,136.38	1%	at stock turnover	\$0.02	17	17	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Economizer	per 30,000 sqft Health bldg.	New	20,737.98	10	\$26,645,250.00	18%	75%	\$132.77	90	537	DEER
Health	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	6,248.28	50	\$75,000.00	15%	25%	\$0.49	28	29	6th Plan
Health	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	713.67	45	\$37,881.00	15%	50%	\$0.10	11	12	BEST Simulation
Health	Cooling	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Cooling	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	5,442.28	45	\$20,784.00	15%	50%	\$0.06	84	89	BPA
Health	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	3,598.97	20	\$10,500.00	15%	50%	\$0.05	56	59	BEST Simulation
Health	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	-74.87	45	\$23,130.00	15%	50%	\$0.26	-1	-1	BEST Simulation
Health	Cooling	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Cooling	PTAC - EER 12.2	per 30,000 sqft Health bldg.	New	22,731.11	15	\$16,595.64	0%	at stock turnover	\$0.08	5	5	BEST Simulation
Health	Cooling	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Cooling	RTU - EER 12.0	per 30,000 sqft Health bldg.	New	49,072.05	23	\$75,057.09	12%	at stock turnover	\$0.16	70	72	BEST Simulation
Health	Cooling	RTU - Evaporative Precooler	per 30,000 sqft Health bldg.	New	0.00	15	\$56,802.00	15%	75%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Cooling	Strategic Energy Management	per 30,000 sqft Health bldg.	New	4,656.34	3	\$9,525.00	4%	28%	\$0.10	64	68	BEST Simulation
Health	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft Health bldg.	New	52,091.09	23	\$21,203.64	76%	at stock turnover	\$0.04	1,941	1,941	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft Health bldg.	New	12,731.52	10	\$813.00	15%	75%	\$0.01	232	250	DEER
Health	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft Health bldg.	New	18,294.34	4	\$813.00	15%	75%	\$0.01	333	358	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft Health bldg.	New	9,868.70	15	\$1,281.00	15%	75%	\$0.01	179	193	BEST Simulation
Health	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft Health bldg.	New	0.00	15	\$5,895.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	134.18	15	\$9,525.00	20%	65%	\$0.03	13	20	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	362.55	5	\$2,142.00	15%	25%	\$1.00	7	15	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	21.84	10	\$1,305.00	33%	60%	\$6.14	1	2	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	Existing	2,110.57	10	\$2,043.00	15%	30%	\$0.11	65	124	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	428.61	15	-\$13.24	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	546.47	15	\$104.89	100%	at stock turnover	\$0.01	376	350	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	79.84	15	\$16.13	100%	at stock turnover	\$0.03	140	135	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	18.21	15	\$1.25	100%	at stock turnover	\$0.01	0	0	EIA 2011
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	122.36	3	\$18,300.00	10%	75%	\$0.13	16	26	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	71.65	6	\$1.19	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	58.31	15	\$21.67	100%	at stock turnover	\$0.02	27	31	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	115.18	3	\$9,525.00	4%	28%	\$0.08	6	12	BEST Simulation
Health	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	630.90	20	\$120,000.00	10%	25%	\$0.05	9	13	AEG research & analysis
Health	Exterior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	101.01	3	\$28,800.00	10%	75%	\$0.25	6	9	6th Plan
Health	Exterior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	114.22	15	\$9,525.00	20%	65%	\$0.03	5	7	BEST Simulation
Health	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	297.10	5	\$2,142.00	15%	25%	\$1.11	3	4	Illinois TRM
Health	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	26.62	10	\$1,305.00	44%	60%	\$4.59	0	1	AEG research & analysis
Health	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft Health bldg.	New	1,742.32	10	\$2,043.00	15%	30%	\$0.12	23	35	AEG research & analysis
Health	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	428.61	15	-\$13.24	100%	at stock turnover	-\$0.01	1	2	EIA 2011
Health	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	546.47	15	\$104.89	100%	at stock turnover	\$0.01	210	197	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	79.84	15	\$16.13	100%	at stock turnover	\$0.03	79	77	EIA 2011
Health	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	18.21	15	\$1.25	100%	at stock turnover	\$0.01	0	0	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Exterior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	71.65	6	\$1.19	100%	at stock turnover	\$0.00	0	0	EIA 2011
Health	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	58.31	15	\$21.67	100%	at stock turnover	\$0.02	16	16	EIA 2011
Health	Exterior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	95.08	3	\$9,525.00	4%	28%	\$0.10	3	4	BEST Simulation
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	44,515.46	15	\$609.26	53%	at stock turnover	\$0.00	609	597	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	4,536.86	10	\$976.74	81%	at stock turnover	\$0.03	328	283	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	7,691.37	18	\$2,746.31	53%	at stock turnover	\$0.04	81	80	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	8,168.48	10	\$1,898.77	70%	at stock turnover	\$0.03	344	297	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft Health bldg.	New	44,515.46	15	\$852.96	75%	at stock turnover	\$0.00	544	523	Illinois TRM
Health	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft Health bldg.	New	4,536.86	10	\$1,210.34	100%	at stock turnover	\$0.04	219	199	Developed from RTF "ComCookingConvectionFryer" v2.0
Health	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft Health bldg.	New	7,691.37	18	\$3,844.83	75%	at stock turnover	\$0.05	61	61	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Health	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft Health bldg.	New	8,168.48	10	\$2,658.27	98%	at stock turnover	\$0.05	259	236	Developed from RTF "ComCookingConvectionOven" v2.0
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	Existing	24,410.43	23	\$28,068.05	1%	at stock turnover	\$0.04	9	9	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	-3,788.64	15	\$11,700.00	45%	50%	\$0.35	-1	-1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	14,105.42	10	\$4,500.00	15%	35%	\$0.03	13	14	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	Existing	209,349.62	15	\$3,573.00	15%	25%	\$0.00	1	1	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	Existing	24,057.58	15	\$9,525.00	20%	65%	\$0.03	51	52	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	Existing	37,977.53	23	\$22,797.59	1%	at stock turnover	\$0.03	14	14	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	-4,597.71	18	\$85,947.00	15%	50%	\$5.25	-7	-8	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	15,769.99	45	\$37,881.00	15%	35%	\$0.17	14	15	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	-6,837.84	20	\$246.00	15%	35%	\$0.01	-6	-7	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	Existing	23,306.24	45	\$20,784.00	15%	35%	\$0.06	21	22	BPA
Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	18,288.63	20	\$10,500.00	15%	50%	\$0.04	29	31	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	69,857.76	45	\$23,130.00	15%	35%	\$0.03	65	67	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	27,611.76	3	\$18,300.00	10%	75%	\$0.13	82	86	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	Existing	0.00	14	\$72,372.00	3%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	20,094.63	3	\$9,525.00	4%	28%	\$0.08	22	24	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	117,419.55	20	\$120,000.00	10%	25%	\$0.05	34	34	AEG research & analysis
Health	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft Health bldg.	New	11,174.36	23	\$22,781.03	1%	at stock turnover	\$0.03	3	3	BEST Simulation
Health	Heating	Commissioning	per 30,000 sqft Health bldg.	New	23,667.48	3	\$28,800.00	10%	75%	\$0.25	29	30	6th Plan
Health	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	50%	\$10.00	0	0	BEST Simulation
Health	Heating	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	12,770.18	10	\$4,500.00	15%	50%	\$0.04	9	9	AEG research & analysis
Health	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft Health bldg.	New	209,349.62	15	\$3,573.00	15%	25%	\$0.00	1	1	Developed from RTF
Health	Heating	Energy Management System	per 30,000 sqft Health bldg.	New	21,583.41	15	\$9,525.00	20%	65%	\$0.03	19	19	BEST Simulation
Health	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft Health bldg.	New	38,748.34	23	\$17,945.23	1%	at stock turnover	\$0.02	11	11	BEST Simulation
Health	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Heating	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	29,325.88	45	\$37,881.00	15%	50%	\$0.10	20	20	BEST Simulation
Health	Heating	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Heating	Insulation - Foundation - R-10	per 30,000 sqft Health bldg.	New	20,424.96	45	\$20,784.00	15%	50%	\$0.06	14	14	BPA

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	16,493.70	20	\$10,500.00	15%	50%	\$0.05	11	11	BEST Simulation
Health	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	6,851.01	45	\$23,130.00	15%	50%	\$0.26	5	5	BEST Simulation
Health	Heating	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Heating	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft Health bldg.	New	0.00	14	\$72,372.00	6%	75%	\$10.00	0	0	DEER
Health	Heating	Strategic Energy Management	per 30,000 sqft Health bldg.	New	17,224.11	3	\$9,525.00	4%	28%	\$0.10	10	10	BEST Simulation
Health	Heating	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	Existing	2,428.55	15	\$9,525.00	20%	65%	\$0.03	216	354	BEST Simulation
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	605.55	15	-\$18.71	100%	at stock turnover	-\$0.01	3	5	EIA 2011
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	772.07	15	\$148.19	100%	at stock turnover	\$0.01	922	860	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	Existing	13,372.16	5	\$41,922.00	5%	15%	\$0.49	85	182	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	Existing	21,444.16	5	\$2,823.00	15%	50%	\$0.03	521	972	Illinois TRM
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	Existing	13,453.38	12	\$12,000.00	3%	25%	\$0.08	554	1,202	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	Existing	2,019.32	16	\$1,779.00	1%	3%	\$0.07	8	19	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	14,447.15	10	\$7,359.00	7%	45%	\$0.05	749	2,241	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	Existing	0.00	25	\$18,450.00	15%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 30,000 sqft Health bldg.	Existing	0.00	8	\$8,100.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	Existing	2,650.20	5	\$3,300.00	10%	25%	\$0.16	20	61	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	228.30	15	\$46.13	100%	at stock turnover	\$0.03	7,831	7,528	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	52.06	15	\$3.57	100%	at stock turnover	\$0.01	0	5	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	2,139.73	3	\$18,300.00	10%	75%	\$0.13	259	450	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	219.86	6	\$3.65	100%	at stock turnover	\$0.00	0	11	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	178.94	15	\$66.49	100%	at stock turnover	\$0.02	2,876	3,285	EIA 2011
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	1,868.17	3	\$9,525.00	4%	28%	\$0.08	83	227	BEST Simulation
Health	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	11,629.61	20	\$120,000.00	10%	25%	\$0.05	149	232	AEG research & analysis
Health	Interior Lighting	Commissioning	per 30,000 sqft Health bldg.	New	1,851.90	3	\$28,800.00	10%	75%	\$0.25	102	159	6th Plan
Health	Interior Lighting	Energy Management System	per 30,000 sqft Health bldg.	New	2,105.17	15	\$9,525.00	20%	65%	\$0.03	81	126	BEST Simulation
Health	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	605.55	15	-\$18.71	100%	at stock turnover	-\$0.01	3	4	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	772.07	15	\$148.19	100%	at stock turnover	\$0.01	515	483	EIA 2011
Health	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft Health bldg.	New	11,686.81	5	\$41,922.00	5%	15%	\$0.53	34	51	Illinois TRM
Health	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft Health bldg.	New	18,843.45	5	\$2,823.00	15%	50%	\$0.03	193	293	Illinois TRM
Health	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft Health bldg.	New	11,648.46	12	\$12,000.00	4%	25%	\$0.09	203	316	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft Health bldg.	New	1,748.21	16	\$1,779.00	1%	3%	\$0.07	3	5	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft Health bldg.	New	12,146.27	10	\$7,359.00	22%	45%	\$0.06	109	364	Ameren Missouri TRM
Health	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft Health bldg.	New	0.00	25	\$18,450.00	18%	25%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft Health bldg.	New	0.00	8	\$8,100.00	7%	15%	\$10.00	0	0	DEER
Health	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft Health bldg.	New	2,117.21	5	\$3,300.00	10%	25%	\$0.19	8	14	AEG research & analysis
Health	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	228.30	15	\$46.13	100%	at stock turnover	\$0.03	4,422	4,300	EIA 2011
Health	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	52.06	15	\$3.57	100%	at stock turnover	\$0.01	0	4	EIA 2011
Health	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
Health	Interior Lighting	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	219.86	6	\$3.65	100%	at stock turnover	\$0.00	0	12	EIA 2011
Health	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	178.94	15	\$66.49	100%	at stock turnover	\$0.02	1,655	1,735	EIA 2011
Health	Interior Lighting	Strategic Energy Management	per 30,000 sqft Health bldg.	New	1,619.55	3	\$9,525.00	4%	28%	\$0.10	43	67	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	279.34	7	\$1,398.00	1%	4%	\$0.18	1	1	Developed from RTF
Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	Existing	4.09	7	\$30.00	1%	3%	\$1.40	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	Existing	199.76	10	\$195.00	1%	3%	\$0.14	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	Existing	0.00	13	\$0.00	74%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	Existing	1,906.40	15	\$7,716.00	15%	75%	\$0.48	91	91	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	Existing	470.62	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	Existing	84.44	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	3,499.95	3	\$9,525.00	4%	28%	\$0.08	183	174	BEST Simulation
Health	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	536.26	7	\$1,398.00	1%	2%	\$0.15	0	0	Developed from RTF

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Health	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft Health bldg.	New	7.92	7	\$3.00	1%	3%	\$0.07	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Health	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft Health bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Health	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft Health bldg.	New	0.00	13	\$0.00	89%	at stock turnover	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft Health bldg.	New	1,906.40	15	\$7,716.00	15%	75%	\$0.48	44	44	AEG research & analysis
Health	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft Health bldg.	New	470.62	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Health	Miscellaneous	Pool Pump - High Efficiency	per 30,000 sqft Health bldg.	New	84.44	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Health	Miscellaneous	Pool Pump - Timer	per 30,000 sqft Health bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Health	Miscellaneous	Strategic Energy Management	per 30,000 sqft Health bldg.	New	3,283.21	3	\$9,525.00	4%	28%	\$0.10	97	94	BEST Simulation
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	5,888.68	6	\$44.18	100%	at stock turnover	\$0.00	217	229	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	Existing	110.00	4	\$795.00	10%	50%	\$2.02	31	35	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	463.74	6	\$11.49	100%	at stock turnover	\$0.01	17	18	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	1,024.26	6	\$69.25	100%	at stock turnover	\$0.01	15	16	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	323.78	5	\$1,200.00	10%	25%	\$0.87	34	39	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	598.86	6	\$4.49	100%	at stock turnover	\$0.00	40	43	Assumed same as Desktop
Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	1,278.96	6	\$16.35	100%	at stock turnover	\$0.00	11	11	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	Existing	859.45	6	\$6.45	100%	at stock turnover	\$0.00	83	85	Assumed same as Desktop
Health	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft Health bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft Health bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Health	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft Health bldg.	New	5,888.68	6	\$44.18	100%	at stock turnover	\$0.00	116	117	ENERGY STAR Calculator
Health	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft Health bldg.	New	203.96	4	\$795.00	10%	50%	\$1.07	23	25	Developed from RTF
Health	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft Health bldg.	New	463.74	6	\$11.49	100%	at stock turnover	\$0.01	9	9	ENERGY STAR Calculator
Health	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft Health bldg.	New	1,024.26	6	\$69.25	100%	at stock turnover	\$0.01	8	8	ENERGY STAR Calculator
Health	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft Health bldg.	New	606.02	5	\$1,200.00	10%	25%	\$0.46	26	28	5th Plan
Health	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft Health bldg.	New	598.86	6	\$4.49	100%	at stock turnover	\$0.00	21	21	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft Health bldg.	New	1,278.96	6	\$16.35	100%	at stock turnover	\$0.00	5	5	ENERGY STAR Calculator
Health	Office Equipment	Server - ENERGY STAR	per 30,000 sqft Health bldg.	New	859.45	6	\$6.45	100%	at stock turnover	\$0.00	39	39	Assumed same as Desktop
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	Existing	1,066.12	9	\$108.39	90%	at stock turnover	\$0.02	28	25	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	Existing	362.07	8	\$2,544.00	0%	25%	\$1.20	9	9	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	Existing	1,232.00	9	\$105.00	0%	25%	\$0.01	17	17	PacifiCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	Existing	335.75	15	\$15,765.00	0%	25%	\$5.22	38	42	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	Existing	692.11	15	\$5,388.00	0%	25%	\$0.88	79	86	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	Existing	645.09	4	\$1,047.00	0%	25%	\$0.48	6	6	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	Existing	2,459.19	10	\$644.35	90%	at stock turnover	\$0.08	200	176	EIA 2011
Health	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft Health bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft Health bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Health	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft Health bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Health	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft Health bldg.	New	1,066.12	9	\$119.23	99%	at stock turnover	\$0.02	15	14	EIA 2011
Health	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft Health bldg.	New	709.18	8	\$2,544.00	0%	25%	\$0.62	8	8	Developed from RTF
Health	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft Health bldg.	New	1,232.00	9	\$105.00	0%	25%	\$0.01	7	7	PacifiCorp Program Data
Health	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft Health bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft Health bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
Health	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft Health bldg.	New	329.75	15	\$15,765.00	0%	25%	\$5.32	17	18	Developed from RTF
Health	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft Health bldg.	New	677.62	15	\$5,388.00	0%	25%	\$0.90	35	36	AEO 2013
Health	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft Health bldg.	New	644.75	4	\$1,047.00	0%	25%	\$0.48	3	3	Developed from RTF
Health	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft Health bldg.	New	2,459.19	10	\$708.78	99%	at stock turnover	\$0.08	131	121	EIA 2011
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	Existing	0.00	15	\$11,700.00	45%	50%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	Existing	6,059.20	15	\$9,525.00	20%	65%	\$0.03	234	294	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	Existing	2,906.73	18	\$85,947.00	15%	50%	\$5.19	83	127	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	Existing	6,910.24	50	\$75,000.00	15%	25%	\$0.33	57	86	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	Existing	3,793.29	20	\$10,500.00	15%	50%	\$0.04	111	143	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	Existing	1,116.16	45	\$23,130.00	15%	35%	\$0.03	19	24	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	Existing	7,021.48	3	\$18,300.00	10%	75%	\$0.13	380	493	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	Existing	5,109.39	3	\$9,525.00	4%	28%	\$0.08	102	167	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	Existing	1,824.43	15	\$6,600.00	15%	75%	\$0.38	89	118	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	Existing	17,529.51	18	\$5,100.00	15%	35%	\$0.03	298	378	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	Existing	68,881.77	20	\$47,211.76	100%	at stock turnover	\$0.07	152	154	BEST Simulation

Measure Data and Assumptions

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Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	Existing	51,653.48	15	\$2,763.00	13%	50%	\$0.01	1,743	2,044	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	Existing	0.00	20	\$8,061.00	48%	48%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	18,508.42	20	\$120,000.00	10%	25%	\$0.05	120	120	AEG research & analysis
Health	Ventilation	Commissioning	per 30,000 sqft Health bldg.	New	3,745.82	3	\$28,800.00	10%	75%	\$0.25	105	105	6th Plan
Health	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft Health bldg.	New	0.00	15	\$11,700.00	45%	50%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft Health bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Health	Ventilation	Energy Management System	per 30,000 sqft Health bldg.	New	3,374.65	15	\$9,525.00	20%	65%	\$0.03	66	66	BEST Simulation
Health	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft Health bldg.	New	0.00	18	\$21.00	15%	35%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft Health bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
Health	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft Health bldg.	New	3,633.49	50	\$75,000.00	15%	25%	\$0.49	16	16	6th Plan
Health	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft Health bldg.	New	1,344.47	45	\$37,881.00	15%	50%	\$0.10	20	20	BEST Simulation
Health	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft Health bldg.	New	0.00	20	\$246.00	15%	50%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft Health bldg.	New	2,129.90	20	\$10,500.00	15%	50%	\$0.05	32	32	BEST Simulation
Health	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft Health bldg.	New	125.55	45	\$23,130.00	15%	50%	\$0.26	2	2	BEST Simulation
Health	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis

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Health	Ventilation	Retrocommissioning	per 30,000 sqft Health bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
Health	Ventilation	Strategic Energy Management	per 30,000 sqft Health bldg.	New	2,725.98	3	\$9,525.00	4%	28%	\$0.10	37	37	BEST Simulation
Health	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft Health bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
Health	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft Health bldg.	New	968.52	15	\$3,900.00	15%	75%	\$0.40	25	25	6th Plan
Health	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft Health bldg.	New	9,401.93	18	\$5,100.00	15%	35%	\$0.05	81	81	DEER
Health	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft Health bldg.	New	51,569.37	20	\$36,967.55	100%	at stock turnover	\$0.07	34	34	BEST Simulation
Health	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft Health bldg.	New	29,199.41	15	\$2,763.00	19%	50%	\$0.01	386	387	BEST Simulation
Health	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft Health bldg.	New	0.00	20	\$8,061.00	66%	66%	\$10.00	0	0	BEST Simulation
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	12,354.59	5	\$5,400.00	3%	75%	\$0.09	204	225	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	Existing	984.75	7	\$1,398.00	1%	4%	\$0.18	1	1	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	Existing	78,300.68	20	\$1,116.00	0%	1%	\$0.00	15	15	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	Existing	13,776.16	5	\$1,200.00	1%	10%	\$0.02	30	31	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	Existing	35,832.67	5	\$993.00	25%	65%	\$0.01	128	347	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

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Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	Existing	4,623.79	15	\$615.00	15%	50%	\$0.01	38	39	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	Existing	116.36	15	\$9.00	15%	75%	\$0.01	2	2	DEER
Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	Existing	8,617.52	15	\$2,421.00	16%	75%	\$0.03	120	125	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	Existing	29,783.05	20	\$12,501.00	1%	30%	\$0.04	202	213	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	Existing	2,984.08	13	\$88.27	22%	at stock turnover	\$0.00	49	47	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	Existing	12,896.61	5	\$5,400.00	3%	75%	\$0.09	216	232	AEG study for PN&L
Health	Water Heating	Advanced New Construction Designs	per 30,000 sqft Health bldg.	New	39,057.43	20	\$120,000.00	10%	25%	\$0.05	56	56	AEG research & analysis
Health	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	11,765.48	5	\$5,400.00	6%	75%	\$0.09	77	78	AEG study for PN&L
Health	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft Health bldg.	New	945.75	7	\$1,398.00	1%	2%	\$0.15	0	0	Developed from RTF
Health	Water Heating	Water Heater - Desuperheater	per 30,000 sqft Health bldg.	New	78,109.87	20	\$1,116.00	0%	1%	\$0.00	6	6	Developed from RTF (Residential)
Health	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft Health bldg.	New	13,938.51	5	\$1,200.00	0%	75%	\$0.02	100	101	AEG study for LA Dept of Water & Power
Health	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft Health bldg.	New	35,750.85	5	\$993.00	25%	65%	\$0.01	52	139	DEER
Health	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft Health bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Health	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft Health bldg.	New	4,676.39	15	\$615.00	15%	50%	\$0.01	16	16	Hawaii TRM
Health	Water Heating	Water Heater - Install Timer	per 30,000 sqft Health bldg.	New	118.22	15	\$9.00	15%	75%	\$0.01	1	1	DEER

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Health	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft Health bldg.	New	8,401.05	15	\$2,421.00	1%	75%	\$0.03	59	60	BEST Simulation
Health	Water Heating	Water Heater - Solar System	per 30,000 sqft Health bldg.	New	28,927.33	20	\$12,501.00	1%	30%	\$0.04	80	81	BEST Simulation
Health	Water Heating	Water Heating - EF 0.89	per 30,000 sqft Health bldg.	New	2,984.08	13	\$88.27	22%	at stock turnover	\$0.00	30	29	BEST Simulation
Health	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft Health bldg.	New	12,231.76	5	\$5,400.00	6%	75%	\$0.09	81	81	AEG study for PN&L
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	Existing	50,687.51	23	\$81,399.88	2%	at stock turnover	\$0.24	65	63	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	Existing	29,340.72	23	\$12,378.60	18%	at stock turnover	\$0.04	163	165	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	25,739.98	10	\$815.00	15%	75%	\$0.00	240	267	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	3,876.80	15	\$2,630.00	15%	75%	\$0.07	35	41	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	Existing	1,102.84	15	\$4,050.00	15%	75%	\$0.34	9	12	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	De-stratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	Existing	21,837.30	12	\$22,500.00	15%	30%	\$0.12	249	300	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

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Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	3,871.25	10	\$7,500.00	15%	35%	\$0.08	59	66	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	37,766.98	15	\$3,570.00	15%	25%	\$0.00	2	2	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	6,552.57	15	\$15,875.00	20%	65%	\$0.06	228	253	BEST Simulation
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	Existing	44,701.55	23	\$66,986.93	1%	at stock turnover	\$0.06	21	21	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	832.57	18	\$105.00	15%	50%	\$0.00	23	26	BEST Simulation
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	Existing	25,216.42	10	\$33,290.00	18%	75%	\$0.17	491	1,264	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	6,879.20	50	\$125,000.00	15%	25%	\$0.61	50	65	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	62.56	45	\$63,135.00	15%	35%	\$0.12	1	1	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	2,206.66	20	\$410.00	15%	35%	\$0.07	34	38	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	6,317.99	45	\$34,640.00	15%	35%	\$0.14	96	108	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	4,130.50	20	\$17,500.00	15%	50%	\$0.09	111	124	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	-4,300.60	45	\$38,550.00	15%	35%	\$0.08	-66	-74	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	Existing	21,940.68	15	\$14,831.61	1%	at stock turnover	\$0.08	10	9	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	6,998.06	3	\$30,500.00	10%	75%	\$0.29	334	390	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	Existing	39,737.10	23	\$83,518.09	52%	at stock turnover	\$0.22	259	261	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$146,375.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	5,069.52	3	\$15,875.00	3%	14%	\$0.19	41	58	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	Existing	47,362.09	23	\$18,729.36	18%	at stock turnover	\$0.04	456	455	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	13,687.56	10	\$815.00	15%	75%	\$0.01	122	145	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	Existing	19,819.81	4	\$815.00	15%	75%	\$0.01	174	212	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	Existing	3,601.32	15	\$2,630.00	15%	75%	\$0.07	31	39	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	Existing	1,097.90	15	\$12,100.00	15%	75%	\$0.95	9	13	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	26,801.51	20	\$200,000.00	10%	30%	\$0.11	180	185	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 50,000 sqft Large Office bldg.	New	26,698.40	23	\$10,111.65	22%	at stock turnover	\$0.04	161	164	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	22,016.96	10	\$815.00	15%	75%	\$0.00	87	89	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	3,803.89	15	\$2,630.00	15%	75%	\$0.07	15	15	BEST Simulation
Large Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$4,050.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Commissioning	per 50,000 sqft Large Office bldg.	New	5,034.04	3	\$48,000.00	10%	75%	\$0.51	109	112	6th Plan
Large Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 50,000 sqft Large Office bldg.	New	0.00	15	\$105,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Cooling	Destratification Fans (HVLS)	per 50,000 sqft Large Office bldg.	New	15,545.71	12	\$22,500.00	15%	30%	\$0.16	78	80	Environment Design Guide, November 2007 (PDF)
Large Office	Cooling	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	2,910.19	10	\$7,500.00	15%	50%	\$0.09	34	35	AEG research & analysis
Large Office	Cooling	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	30,716.95	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Large Office	Cooling	Energy Management System	per 50,000 sqft Large Office bldg.	New	4,943.12	15	\$15,875.00	20%	65%	\$0.06	75	77	BEST Simulation
Large Office	Cooling	Evaporative Cooling - Indirect/Direct	per 50,000 sqft Large Office bldg.	New	12,402.20	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
Large Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	38,426.04	23	\$60,507.01	2%	at stock turnover	\$0.06	13	13	BEST Simulation
Large Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	1,514.85	18	\$105.00	15%	35%	\$0.00	10	11	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	HVAC - Economizer	per 50,000 sqft Large Office bldg.	New	17,979.62	10	\$33,290.00	18%	75%	\$0.22	58	336	DEER
Large Office	Cooling	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	4,915.47	50	\$125,000.00	15%	25%	\$0.80	16	17	6th Plan
Large Office	Cooling	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	-815.23	45	\$63,135.00	15%	50%	\$0.23	-9	-10	BEST Simulation
Large Office	Cooling	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	4,621.73	45	\$34,640.00	15%	50%	\$0.15	54	56	BPA
Large Office	Cooling	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	3,084.21	20	\$17,500.00	15%	50%	\$0.10	36	37	BEST Simulation
Large Office	Cooling	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	-58.90	45	\$38,550.00	15%	50%	\$0.61	-1	-1	BEST Simulation
Large Office	Cooling	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	PTAC - EER 12.2	per 50,000 sqft Large Office bldg.	New	19,287.06	15	\$14,081.19	1%	at stock turnover	\$0.08	5	5	BEST Simulation
Large Office	Cooling	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Cooling	RTU - EER 12.0	per 50,000 sqft Large Office bldg.	New	33,971.48	23	\$75,439.05	65%	at stock turnover	\$0.23	177	180	BEST Simulation
Large Office	Cooling	RTU - Evaporative Precooler	per 50,000 sqft Large Office bldg.	New	0.00	15	\$146,375.00	15%	75%	\$10.00	0	0	DEER
Large Office	Cooling	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	3,897.88	3	\$15,875.00	3%	14%	\$0.22	19	19	BEST Simulation
Large Office	Cooling	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 50,000 sqft Large Office bldg.	New	43,187.34	23	\$15,299.37	22%	at stock turnover	\$0.04	331	331	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 50,000 sqft Large Office bldg.	New	10,586.50	10	\$815.00	15%	75%	\$0.01	40	43	DEER
Large Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 50,000 sqft Large Office bldg.	New	15,219.38	4	\$815.00	15%	75%	\$0.01	57	62	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 50,000 sqft Large Office bldg.	New	3,073.49	15	\$2,630.00	15%	75%	\$0.07	11	12	BEST Simulation
Large Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 50,000 sqft Large Office bldg.	New	0.00	15	\$12,100.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	319.77	15	\$15,875.00	20%	65%	\$0.06	25	40	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	868.08	5	\$3,945.00	15%	25%	\$0.75	14	30	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	204.12	10	\$2,845.00	33%	60%	\$1.39	9	19	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	Existing	5,071.76	10	\$4,455.00	15%	30%	\$0.10	132	257	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	453.81	15	-\$20.03	100%	at stock turnover	-\$0.02	3	11	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	578.60	15	\$158.65	100%	at stock turnover	\$0.01	886	886	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	99.01	15	\$21.32	100%	at stock turnover	\$0.02	370	363	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	23.17	15	\$2.27	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	292.96	3	\$30,500.00	10%	75%	\$0.29	32	53	6th Plan
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	98.30	6	\$2.33	100%	at stock turnover	\$0.00	0	1	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	80.01	15	\$42.47	100%	at stock turnover	\$0.04	159	182	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	254.66	3	\$15,875.00	3%	14%	\$0.19	5	11	BEST Simulation
Large Office	Exterior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	1,478.19	20	\$200,000.00	10%	30%	\$0.11	22	31	AEG research & analysis
Large Office	Exterior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	235.61	3	\$48,000.00	10%	75%	\$0.51	11	16	6th Plan
Large Office	Exterior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	267.62	15	\$15,875.00	20%	65%	\$0.06	9	13	BEST Simulation
Large Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	693.04	5	\$3,945.00	15%	25%	\$0.86	5	7	Illinois TRM
Large Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	196.86	10	\$2,845.00	44%	60%	\$1.32	2	3	AEG research & analysis
Large Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 50,000 sqft Large Office bldg.	New	4,080.06	10	\$4,455.00	15%	30%	\$0.11	45	65	AEG research & analysis
Large Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	453.81	15	-\$20.03	100%	at stock turnover	-\$0.02	2	2	EIA 2011
Large Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	578.60	15	\$158.65	100%	at stock turnover	\$0.01	395	377	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	99.01	15	\$21.32	100%	at stock turnover	\$0.02	170	170	EIA 2011
Large Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	23.17	15	\$2.27	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Office	Exterior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	98.30	6	\$2.33	100%	at stock turnover	\$0.00	0	1	EIA 2011
Large Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	80.01	15	\$42.47	100%	at stock turnover	\$0.03	75	78	EIA 2011
Large Office	Exterior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	204.81	3	\$15,875.00	3%	14%	\$0.22	2	3	BEST Simulation
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	9,275.73	15	\$102.24	43%	at stock turnover	\$0.00	88	86	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	945.35	10	\$192.68	76%	at stock turnover	\$0.03	55	48	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	1,602.66	18	\$460.87	43%	at stock turnover	\$0.03	12	12	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	1,702.07	10	\$374.64	66%	at stock turnover	\$0.03	58	50	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Food Preparation	Dishwasher - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	9,275.73	15	\$122.69	52%	at stock turnover	\$0.00	55	53	Illinois TRM
Large Office	Food Preparation	Fryer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	945.35	10	\$231.22	92%	at stock turnover	\$0.04	29	27	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Office	Food Preparation	Hot Food Container - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	1,602.66	18	\$553.05	52%	at stock turnover	\$0.04	6	6	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Office	Food Preparation	Oven - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	1,702.07	10	\$449.57	79%	at stock turnover	\$0.04	31	28	Developed from RTF "ComCookingConvectionOven" v2.0
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	Existing	4,191.50	23	\$119,911.99	2%	at stock turnover	\$0.24	5	5	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	8,973.67	10	\$7,500.00	15%	35%	\$0.08	50	51	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	Existing	120,515.30	15	\$3,570.00	15%	25%	\$0.00	293	293	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	15,099.71	15	\$15,875.00	20%	65%	\$0.06	191	194	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	Existing	35,756.04	23	\$43,926.91	1%	at stock turnover	\$0.06	17	17	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	-680.41	18	\$105.00	15%	50%	\$0.00	-7	-7	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	44,935.38	45	\$63,135.00	15%	35%	\$0.12	246	256	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	-1,611.16	20	\$410.00	15%	35%	\$0.07	-9	-9	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	Existing	14,437.21	45	\$34,640.00	15%	35%	\$0.14	78	82	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	11,484.00	20	\$17,500.00	15%	50%	\$0.09	111	115	BEST Simulation
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	43,750.21	45	\$38,550.00	15%	35%	\$0.08	244	249	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	17,182.77	3	\$30,500.00	10%	75%	\$0.29	300	318	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	Existing	0.00	14	\$216,640.00	3%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	12,447.93	3	\$15,875.00	3%	14%	\$0.19	37	41	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	80,298.31	20	\$200,000.00	10%	30%	\$0.11	152	152	AEG research & analysis
Large Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 50,000 sqft Large Office bldg.	New	15,405.05	23	\$111,680.73	3%	at stock turnover	\$0.20	14	13	BEST Simulation
Large Office	Heating	Commissioning	per 50,000 sqft Large Office bldg.	New	16,079.93	3	\$48,000.00	10%	75%	\$0.51	99	99	6th Plan
Large Office	Heating	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	8,732.86	10	\$7,500.00	15%	50%	\$0.09	29	29	AEG research & analysis
Large Office	Heating	Ductless Mini Split Heat Pump	per 50,000 sqft Large Office bldg.	New	120,419.33	15	\$3,570.00	15%	25%	\$0.00	97	97	Developed from RTF
Large Office	Heating	Energy Management System	per 50,000 sqft Large Office bldg.	New	14,759.56	15	\$15,875.00	20%	65%	\$0.06	63	63	BEST Simulation
Large Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 50,000 sqft Large Office bldg.	New	32,885.49	23	\$43,568.46	1%	at stock turnover	\$0.06	10	10	BEST Simulation
Large Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	1,945.30	18	\$105.00	15%	35%	\$0.00	4	4	BEST Simulation
Large Office	Heating	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	22,632.85	45	\$63,135.00	15%	50%	\$0.23	75	75	BEST Simulation
Large Office	Heating	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Insulation - Foundation - R-10	per 50,000 sqft Large Office bldg.	New	13,844.54	45	\$34,640.00	15%	50%	\$0.15	46	46	BPA
Large Office	Heating	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	11,279.25	20	\$17,500.00	15%	50%	\$0.10	37	37	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Heating	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	4,654.82	45	\$38,550.00	15%	50%	\$0.61	15	15	BEST Simulation
Large Office	Heating	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Heating	Space Heating - Heat Recovery Ventilator	per 50,000 sqft Large Office bldg.	New	0.00	14	\$216,640.00	6%	75%	\$10.00	0	0	DEER
Large Office	Heating	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	11,860.43	3	\$15,875.00	3%	14%	\$0.22	16	16	BEST Simulation
Large Office	Heating	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Heating	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	2,534.73	15	\$15,875.00	20%	65%	\$0.06	195	316	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	389.66	15	-\$17.20	100%	at stock turnover	-\$0.02	6	22	EIA 2011
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	496.81	15	\$136.22	100%	at stock turnover	\$0.01	1,805	1,805	EIA 2011
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	Existing	14,545.83	5	\$52,150.00	5%	15%	\$0.58	79	169	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	Existing	23,243.33	5	\$3,265.00	15%	50%	\$0.03	486	898	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	Existing	14,032.01	12	\$20,000.00	3%	25%	\$0.13	500	1,064	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	Existing	2,106.17	16	\$2,060.00	1%	3%	\$0.07	7	17	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	15,077.50	10	\$8,520.00	7%	45%	\$0.06	676	1,984	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	Existing	0.00	25	\$20,500.00	15%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	Existing	1,799.67	5	\$5,500.00	10%	25%	\$0.38	10	37	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	140.80	15	\$30.32	100%	at stock turnover	\$0.02	6,944	6,822	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	32.95	15	\$3.23	100%	at stock turnover	\$0.01	0	7	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	2,240.89	3	\$30,500.00	10%	75%	\$0.29	235	404	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	148.13	6	\$3.52	100%	at stock turnover	\$0.00	0	8	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	120.56	15	\$63.99	100%	at stock turnover	\$0.04	1,432	1,641	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,947.88	3	\$15,875.00	3%	14%	\$0.19	35	91	BEST Simulation
Large Office	Interior Lighting	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	11,241.69	20	\$200,000.00	10%	30%	\$0.11	147	237	AEG research & analysis
Large Office	Interior Lighting	Commissioning	per 50,000 sqft Large Office bldg.	New	1,860.05	3	\$48,000.00	10%	75%	\$0.51	79	126	6th Plan
Large Office	Interior Lighting	Energy Management System	per 50,000 sqft Large Office bldg.	New	2,122.41	15	\$15,875.00	20%	65%	\$0.06	63	101	BEST Simulation
Large Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	389.66	15	-\$17.20	100%	at stock turnover	-\$0.02	3	5	EIA 2011
Large Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	496.81	15	\$136.22	100%	at stock turnover	\$0.01	805	768	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 50,000 sqft Large Office bldg.	New	13,093.50	5	\$52,150.00	5%	15%	\$0.62	26	41	Illinois TRM
Large Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 50,000 sqft Large Office bldg.	New	21,218.48	5	\$3,265.00	15%	50%	\$0.03	149	236	Illinois TRM
Large Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 50,000 sqft Large Office bldg.	New	11,640.27	12	\$20,000.00	4%	25%	\$0.15	156	250	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 50,000 sqft Large Office bldg.	New	1,807.68	16	\$2,060.00	1%	3%	\$0.09	2	4	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	12,561.91	10	\$8,520.00	22%	45%	\$0.07	87	299	Ameren Missouri TRM
Large Office	Interior Lighting	Interior Lighting - Skylights	per 50,000 sqft Large Office bldg.	New	0.00	25	\$20,500.00	18%	25%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 50,000 sqft Large Office bldg.	New	0.00	8	\$9,245.00	7%	15%	\$10.00	0	0	DEER
Large Office	Interior Lighting	Interior Screw-in - Task Lighting	per 50,000 sqft Large Office bldg.	New	1,236.76	5	\$5,500.00	10%	25%	\$0.53	3	6	AEG research & analysis
Large Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	140.80	15	\$30.32	100%	at stock turnover	\$0.02	3,196	3,188	EIA 2011
Large Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	32.95	15	\$3.23	100%	at stock turnover	\$0.01	0	5	EIA 2011
Large Office	Interior Lighting	Lodging - Guest Room Controls	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Office	Interior Lighting	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	148.13	6	\$3.52	100%	at stock turnover	\$0.00	0	5	EIA 2011
Large Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	120.56	15	\$63.99	100%	at stock turnover	\$0.03	674	707	EIA 2011
Large Office	Interior Lighting	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,618.29	3	\$15,875.00	3%	14%	\$0.22	15	24	BEST Simulation
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	104.61	7	\$1,395.00	1%	4%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	Existing	1.53	7	\$30.00	1%	3%	\$3.76	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	Existing	74.52	10	\$195.00	1%	3%	\$0.39	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	Existing	0.00	13	\$0.00	90%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	Existing	1,846.00	15	\$12,385.00	15%	75%	\$0.80	92	92	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	1,433.73	3	\$15,875.00	3%	14%	\$0.19	32	30	BEST Simulation
Large Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	112.51	7	\$1,395.00	1%	2%	\$0.18	0	0	Developed from RTF
Large Office	Miscellaneous	ENERGY STAR Battery Chargers	per 50,000 sqft Large Office bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Miscellaneous	ENERGY STAR Water Cooler	per 50,000 sqft Large Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculatorBulkPurchasingWaterCooler.xls
Large Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 50,000 sqft Large Office bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 50,000 sqft Large Office bldg.	New	1,846.00	15	\$12,385.00	15%	75%	\$0.80	34	34	AEG research & analysis
Large Office	Miscellaneous	Pool Pump - High Efficiency	per 50,000 sqft Large Office bldg.	New	140.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Office	Miscellaneous	Pool Pump - Timer	per 50,000 sqft Large Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Office	Miscellaneous	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	1,398.32	3	\$15,875.00	3%	14%	\$0.22	14	14	BEST Simulation
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$500,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	37,644.88	6	\$282.46	100%	at stock turnover	\$0.00	1,189	1,256	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	Existing	1,185.44	4	\$1,325.00	10%	50%	\$0.31	261	297	Developed from RTF
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	7,411.43	6	\$183.70	100%	at stock turnover	\$0.01	234	247	ENERGY STAR Calculator
Large Office	Office Equipment	Monitor - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,547.85	6	\$442.72	100%	at stock turnover	\$0.01	83	87	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	3,499.51	5	\$2,000.00	10%	25%	\$0.13	291	329	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	638.07	6	\$1.92	40%	at stock turnover	\$0.00	15	16	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	Existing	6,813.39	6	\$87.11	100%	at stock turnover	\$0.00	49	52	ENERGY STAR Calculator
Large Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 50,000 sqft Large Office bldg.	New	0.00	20	\$150,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Data Center - Server Virtualization	per 50,000 sqft Large Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Office	Office Equipment	Desktop Computer - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	37,644.88	6	\$282.46	100%	at stock turnover	\$0.00	522	526	ENERGY STAR Calculator
Large Office	Office Equipment	Electronics - Smart Power Strips	per 50,000 sqft Large Office bldg.	New	1,227.34	4	\$1,325.00	10%	50%	\$0.30	90	96	Developed from RTF
Large Office	Office Equipment	Laptop - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	7,411.43	6	\$183.70	100%	at stock turnover	\$0.01	103	104	ENERGY STAR Calculator
Large Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	3,639.74	5	\$2,000.00	10%	25%	\$0.13	100	107	5th Plan
Large Office	Office Equipment	POS Terminal - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	638.07	6	\$2.11	44%	at stock turnover	\$0.00	7	7	Assumed same as Desktop
Large Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	6,813.39	6	\$87.11	100%	at stock turnover	\$0.00	18	18	ENERGY STAR Calculator
Large Office	Office Equipment	Server - ENERGY STAR	per 50,000 sqft Large Office bldg.	New	4,578.56	6	\$34.35	100%	at stock turnover	\$0.00	146	145	Assumed same as Desktop
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	Existing	490.93	9	\$24.79	45%	at stock turnover	\$0.01	5	5	EIA 2011
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	Existing	1,232.00	9	\$105.00	0%	10%	\$0.01	2	2	PacifiCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$27,865.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$5,385.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	Existing	0.00	4	\$12,680.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	Existing	2,264.85	10	\$294.74	45%	at stock turnover	\$0.04	70	62	EIA 2011
Large Office	Refrigeration	Grocery - Display Case - LED Lighting	per 50,000 sqft Large Office bldg.	New	0.00	5	\$1,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Display Case Motion Sensors	per 50,000 sqft Large Office bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 50,000 sqft Large Office bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 50,000 sqft Large Office bldg.	New	490.93	9	\$29.75	54%	at stock turnover	\$0.01	3	2	EIA 2011
Large Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 50,000 sqft Large Office bldg.	New	0.00	8	\$2,545.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 50,000 sqft Large Office bldg.	New	1,232.00	9	\$105.00	0%	10%	\$0.01	1	1	PacifiCorp Program Data
Large Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 50,000 sqft Large Office bldg.	New	0.00	4	\$2,305.00	0%	0%	\$10.00	0	0	DEER
Large Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 50,000 sqft Large Office bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Refrigeration	Refrigeration - Floating Head Pressure	per 50,000 sqft Large Office bldg.	New	0.00	15	\$27,865.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 50,000 sqft Large Office bldg.	New	0.00	15	\$5,385.00	0%	0%	\$10.00	0	0	AEO 2013
Large Office	Refrigeration	Refrigeration - Strip Curtain	per 50,000 sqft Large Office bldg.	New	0.00	4	\$12,680.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 50,000 sqft Large Office bldg.	New	2,264.85	10	\$353.69	54%	at stock turnover	\$0.04	42	39	EIA 2011
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	Existing	0.00	3	\$48,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	Existing	0.00	10	\$7,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	Existing	6,606.59	15	\$15,875.00	20%	65%	\$0.06	227	275	BEST Simulation
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	Existing	3,621.84	18	\$105.00	15%	50%	\$0.00	105	125	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	Existing	7,622.53	50	\$125,000.00	15%	25%	\$0.61	56	79	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	Existing	838.20	45	\$63,135.00	15%	35%	\$0.12	13	16	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	Existing	-112.54	20	\$410.00	15%	35%	\$0.07	-2	-2	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	Existing	4,185.70	20	\$17,500.00	15%	50%	\$0.09	110	135	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	Existing	1,231.64	45	\$38,550.00	15%	35%	\$0.08	19	23	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	Existing	7,777.95	3	\$30,500.00	10%	75%	\$0.29	379	468	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	Existing	5,634.49	3	\$15,875.00	3%	14%	\$0.19	46	70	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	Existing	0.00	5	\$165.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	Existing	2,027.92	15	\$11,000.00	15%	75%	\$0.57	90	113	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	Existing	19,529.34	18	\$8,500.00	15%	35%	\$0.04	301	361	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	Existing	53,988.32	20	\$71,931.04	100%	at stock turnover	\$0.14	157	159	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	Existing	57,079.11	15	\$8,275.00	13%	50%	\$0.02	1,730	1,936	BEST Simulation
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$97,665.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	27,993.80	20	\$200,000.00	10%	30%	\$0.11	169	170	AEG research & analysis
Large Office	Ventilation	Commissioning	per 50,000 sqft Large Office bldg.	New	5,733.87	3	\$48,000.00	10%	75%	\$0.51	112	113	6th Plan
Large Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 50,000 sqft Large Office bldg.	New	0.00	15	\$13,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Doors - High Efficiency - R-5	per 50,000 sqft Large Office bldg.	New	0.00	10	\$7,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Office	Ventilation	Energy Management System	per 50,000 sqft Large Office bldg.	New	5,103.98	15	\$15,875.00	20%	65%	\$0.06	69	70	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 50,000 sqft Large Office bldg.	New	3,612.61	18	\$105.00	15%	35%	\$0.00	22	22	BEST Simulation
Large Office	Ventilation	HVAC - Occupancy Sensors	per 50,000 sqft Large Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 50,000 sqft Large Office bldg.	New	5,594.63	50	\$125,000.00	15%	25%	\$0.80	17	17	6th Plan
Large Office	Ventilation	Insulation - Ceiling - R-38	per 50,000 sqft Large Office bldg.	New	233.80	45	\$63,135.00	15%	50%	\$0.23	2	2	BEST Simulation
Large Office	Ventilation	Insulation - Ducting - R-8	per 50,000 sqft Large Office bldg.	New	0.00	20	\$410.00	15%	50%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Insulation - Radiant Barrier - R-5	per 50,000 sqft Large Office bldg.	New	3,221.43	20	\$17,500.00	15%	50%	\$0.10	34	34	BEST Simulation
Large Office	Ventilation	Insulation - Wall Cavity - R-23	per 50,000 sqft Large Office bldg.	New	192.18	45	\$38,550.00	15%	50%	\$0.61	2	2	BEST Simulation
Large Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Ventilation	Retrocommissioning	per 50,000 sqft Large Office bldg.	New	0.00	3	\$30,500.00	0%	0%	\$10.00	0	0	6th Plan
Large Office	Ventilation	Strategic Energy Management	per 50,000 sqft Large Office bldg.	New	4,180.38	3	\$15,875.00	3%	14%	\$0.22	18	18	BEST Simulation
Large Office	Ventilation	Thermostat - Clock/Programmable	per 50,000 sqft Large Office bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 50,000 sqft Large Office bldg.	New	1,528.40	15	\$6,500.00	15%	75%	\$0.43	28	28	6th Plan
Large Office	Ventilation	Ventilation - ECM on VAV Boxes	per 50,000 sqft Large Office bldg.	New	15,175.98	18	\$8,500.00	15%	35%	\$0.06	92	92	DEER
Large Office	Ventilation	Ventilation - Variable Air Volume	per 50,000 sqft Large Office bldg.	New	47,486.11	20	\$71,342.07	100%	at stock turnover	\$0.16	47	47	BEST Simulation
Large Office	Ventilation	Ventilation - Variable Speed Control	per 50,000 sqft Large Office bldg.	New	44,968.68	15	\$8,275.00	19%	50%	\$0.02	417	419	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 50,000 sqft Large Office bldg.	New	0.00	20	\$97,665.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	Existing	0.00	20	\$200,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,221.79	5	\$9,000.00	3%	75%	\$0.43	106	118	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	Existing	1,167.73	7	\$1,395.00	1%	4%	\$0.18	1	1	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	Existing	27,090.05	20	\$1,115.00	1%	7%	\$0.00	58	59	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,708.58	5	\$2,000.00	1%	10%	\$0.09	16	16	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	Existing	12,182.20	5	\$660.00	25%	65%	\$0.01	66	183	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	Existing	1,572.60	15	\$580.00	15%	25%	\$0.04	6	6	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	Existing	225.23	15	\$15.00	15%	75%	\$0.01	5	5	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	Existing	2,834.18	15	\$3,125.00	16%	75%	\$0.11	60	64	BEST Simulation
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	Existing	10,404.58	20	\$12,500.00	1%	30%	\$0.11	109	113	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	Existing	1,031.68	13	\$64.83	40%	at stock turnover	\$0.01	26	25	BEST Simulation
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	Existing	4,406.60	5	\$9,000.00	3%	75%	\$0.43	112	122	AEG study for PN&L
Large Office	Water Heating	Advanced New Construction Designs	per 50,000 sqft Large Office bldg.	New	13,687.39	20	\$200,000.00	10%	30%	\$0.11	33	33	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	4,139.74	5	\$9,000.00	6%	75%	\$0.43	34	34	AEG study for PN&L
Large Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 50,000 sqft Large Office bldg.	New	1,101.69	7	\$1,395.00	1%	2%	\$0.18	0	0	Developed from RTF
Large Office	Water Heating	Water Heater - Desuperheater	per 50,000 sqft Large Office bldg.	New	27,024.38	20	\$1,115.00	1%	7%	\$0.00	21	21	Developed from RTF (Residential)
Large Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 50,000 sqft Large Office bldg.	New	4,759.24	5	\$2,000.00	0%	75%	\$0.09	43	43	AEG study for LA Dept of Water & Power
Large Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 50,000 sqft Large Office bldg.	New	12,146.44	5	\$660.00	25%	65%	\$0.01	22	59	DEER
Large Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 50,000 sqft Large Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 50,000 sqft Large Office bldg.	New	1,589.34	15	\$580.00	15%	25%	\$0.04	2	2	Hawaii TRM
Large Office	Water Heating	Water Heater - Install Timer	per 50,000 sqft Large Office bldg.	New	225.58	15	\$15.00	15%	75%	\$0.01	2	2	DEER
Large Office	Water Heating	Water Heater - Pipe Insulation	per 50,000 sqft Large Office bldg.	New	2,673.19	15	\$3,125.00	1%	75%	\$0.12	24	24	BEST Simulation
Large Office	Water Heating	Water Heater - Solar System	per 50,000 sqft Large Office bldg.	New	10,134.99	20	\$12,500.00	1%	30%	\$0.11	35	35	BEST Simulation
Large Office	Water Heating	Water Heating - EF 0.89	per 50,000 sqft Large Office bldg.	New	1,031.68	13	\$64.83	40%	at stock turnover	\$0.01	13	12	BEST Simulation
Large Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 50,000 sqft Large Office bldg.	New	3,982.15	5	\$9,000.00	6%	75%	\$0.43	33	33	AEG study for PN&L
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Large Retail bldg.	Existing	59,791.85	23	\$38,201.61	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	Existing	63,860.04	23	\$21,320.17	12%	at stock turnover	\$0.03	105	106	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	52,247.26	10	\$810.00	15%	75%	\$0.00	86	95	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	7,610.72	15	\$2,160.00	15%	75%	\$0.03	12	14	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	Existing	1,988.76	15	\$4,480.00	15%	75%	\$0.21	3	4	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	Existing	46,833.92	12	\$45,000.00	15%	30%	\$0.11	136	168	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	8,975.55	10	\$15,000.00	15%	35%	\$0.06	36	40	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	86,166.53	15	\$3,570.00	15%	25%	\$0.00	2	2	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	15,062.61	15	\$31,750.00	20%	65%	\$0.05	137	150	BEST Simulation
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	Existing	28,477.64	15	\$62,125.35	2%	at stock turnover	\$0.27	13	12	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	Existing	102,651.77	23	\$103,914.74	1%	at stock turnover	\$0.06	7	7	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	1,993.64	18	\$120.00	15%	25%	\$0.00	4	5	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	Existing	60,401.43	10	\$36,840.00	18%	75%	\$0.08	306	758	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	15,971.71	50	\$250,000.00	15%	25%	\$0.79	30	39	6th Plan
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	-5,992.40	45	\$126,270.00	15%	35%	\$0.07	-24	-26	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	6,767.63	20	\$820.00	15%	35%	\$0.05	27	30	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	13,833.19	45	\$69,280.00	15%	35%	\$0.11	54	61	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	9,565.69	20	\$35,000.00	15%	50%	\$0.08	67	74	BEST Simulation
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	-9,968.00	45	\$77,100.00	15%	35%	\$0.06	-40	-44	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	PTAC - EER 12.2	per 100,000 sqft Large Retail bldg.	Existing	50,379.66	15	\$34,055.99	1%	at stock turnover	\$0.08	10	9	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	16,239.61	3	\$61,000.00	10%	75%	\$0.25	203	233	6th Plan
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$161,980.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	11,736.05	3	\$31,750.00	0%	3%	\$0.16	7	9	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	29,632.52	10	\$810.00	15%	75%	\$0.00	12	14	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	Existing	41,180.97	4	\$810.00	15%	75%	\$0.01	16	19	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	Existing	7,040.30	15	\$2,160.00	15%	75%	\$0.03	3	3	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	Existing	1,893.85	15	\$9,910.00	15%	75%	\$0.45	1	1	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	68,517.37	20	\$400,000.00	10%	30%	\$0.09	122	125	AEG research & analysis
Large Retail	Cooling	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Large Retail bldg.	New	58,640.96	23	\$32,802.69	2%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Large Retail bldg.	New	57,648.08	23	\$19,053.37	16%	at stock turnover	\$0.03	77	78	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	43,191.25	10	\$810.00	15%	75%	\$0.00	30	31	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	6,327.20	15	\$2,160.00	15%	75%	\$0.03	4	5	BEST Simulation
Large Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$4,480.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Commissioning	per 100,000 sqft Large Retail bldg.	New	12,877.09	3	\$96,000.00	10%	75%	\$0.42	74	76	6th Plan
Large Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Large Retail bldg.	New	37,100.85	12	\$45,000.00	15%	30%	\$0.13	49	50	Environment Design Guide, November 2007 (PDF)
Large Retail	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	7,404.50	10	\$15,000.00	15%	50%	\$0.07	23	24	AEG research & analysis
Large Retail	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	70,443.09	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Large Retail	Cooling	Energy Management System	per 100,000 sqft Large Retail bldg.	New	12,514.18	15	\$31,750.00	20%	65%	\$0.05	50	51	BEST Simulation
Large Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Large Retail bldg.	New	28,477.64	15	\$86,975.49	3%	at stock turnover	\$0.37	9	8	PacifiCorp Program Data
Large Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	New	100,678.80	23	\$89,228.78	1%	at stock turnover	\$0.06	5	5	BEST Simulation
Large Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	3,850.94	18	\$110.00	15%	25%	\$0.00	3	4	BEST Simulation
Large Retail	Cooling	HVAC - Economizer	per 100,000 sqft Large Retail bldg.	New	47,884.37	10	\$36,840.00	18%	75%	\$0.10	40	232	DEER
Large Retail	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	12,572.63	50	\$250,000.00	15%	25%	\$1.03	11	11	6th Plan
Large Retail	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-5,482.69	45	\$126,270.00	15%	50%	\$0.07	-17	-17	BEST Simulation
Large Retail	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	11,029.97	45	\$69,280.00	15%	50%	\$0.11	34	35	BPA
Large Retail	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	7,884.88	20	\$35,000.00	15%	50%	\$0.08	25	25	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	-150.65	45	\$77,100.00	15%	50%	\$0.47	0	0	BEST Simulation
Large Retail	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$161,980.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Cooling	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	9,302.64	3	\$31,750.00	0%	3%	\$0.18	3	3	BEST Simulation
Large Retail	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Large Retail bldg.	New	93,340.30	23	\$28,828.58	4%	at stock turnover	\$0.03	32	32	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	22,929.60	10	\$810.00	15%	75%	\$0.00	4	4	DEER
Large Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Large Retail bldg.	New	32,236.61	4	\$810.00	15%	75%	\$0.01	5	6	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Large Retail bldg.	New	4,728.61	15	\$2,160.00	15%	75%	\$0.04	1	1	BEST Simulation
Large Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$9,910.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	1,432.66	15	\$31,750.00	20%	65%	\$0.05	30	48	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	3,840.94	5	\$45,480.00	15%	25%	\$1.93	17	37	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	2,700.76	10	\$26,030.00	33%	60%	\$0.98	32	70	AEG research & analysis
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	Existing	22,702.74	10	\$40,740.00	15%	30%	\$0.20	156	315	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	275.21	15	-\$10.63	100%	at stock turnover	-\$0.01	3	4	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	350.89	15	\$84.19	100%	at stock turnover	\$0.01	719	668	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	53.28	15	\$10.04	100%	at stock turnover	\$0.03	414	404	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	12.47	15	\$1.07	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	1,317.81	3	\$61,000.00	10%	75%	\$0.25	38	64	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	60.65	6	\$1.26	100%	at stock turnover	\$0.00	0	1	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	49.36	15	\$22.92	100%	at stock turnover	\$0.03	207	237	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	1,230.04	3	\$31,750.00	0%	3%	\$0.16	2	4	BEST Simulation
Large Retail	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	6,632.32	20	\$400,000.00	10%	30%	\$0.09	20	30	AEG research & analysis
Large Retail	Exterior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	1,060.42	3	\$96,000.00	10%	75%	\$0.42	10	16	6th Plan
Large Retail	Exterior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	1,200.68	15	\$31,750.00	20%	65%	\$0.05	8	12	BEST Simulation
Large Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	3,085.80	5	\$45,480.00	15%	25%	\$2.23	5	7	Illinois TRM
Large Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	2,310.08	10	\$26,030.00	44%	60%	\$1.05	6	8	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Large Retail bldg.	New	18,289.46	10	\$40,740.00	15%	30%	\$0.23	41	62	AEG research & analysis
Large Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	275.21	15	-\$10.63	100%	at stock turnover	-\$0.01	2	3	EIA 2011
Large Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	350.89	15	\$84.19	100%	at stock turnover	\$0.01	297	277	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	53.28	15	\$10.04	100%	at stock turnover	\$0.03	171	169	EIA 2011
Large Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	12.47	15	\$1.07	100%	at stock turnover	\$0.01	0	0	EIA 2011
Large Retail	Exterior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	60.65	6	\$1.26	100%	at stock turnover	\$0.00	0	1	EIA 2011
Large Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	49.36	15	\$22.92	100%	at stock turnover	\$0.03	86	90	EIA 2011
Large Retail	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	990.93	3	\$31,750.00	0%	3%	\$0.18	1	1	BEST Simulation
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	46,468.29	15	\$470.67	40%	at stock turnover	\$0.00	109	106	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	4,735.89	10	\$571.07	45%	at stock turnover	\$0.02	44	38	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	8,028.78	18	\$2,121.61	40%	at stock turnover	\$0.03	14	14	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	8,526.82	10	\$1,390.57	49%	at stock turnover	\$0.02	58	50	Developed from RTF "ComCookingConvectionOven" v2.0
Large Retail	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	46,468.29	15	\$706.01	59%	at stock turnover	\$0.00	76	73	Illinois TRM
Large Retail	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	4,735.89	10	\$856.61	68%	at stock turnover	\$0.03	26	24	Developed from RTF "ComCookingConvectionFryer" v2.0
Large Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	8,028.78	18	\$3,182.42	59%	at stock turnover	\$0.04	9	8	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Large Retail	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	8,526.82	10	\$2,085.86	73%	at stock turnover	\$0.04	34	31	Developed from RTF "ComCookingConvectionOven" v2.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Large Retail bldg.	Existing	8,480.42	23	\$139,283.73	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	24,176.86	10	\$15,000.00	15%	35%	\$0.06	34	35	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	324,813.74	15	\$3,570.00	15%	25%	\$0.00	204	204	Developed from RTF
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	41,236.79	15	\$31,750.00	20%	65%	\$0.05	133	134	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	-499.08	18	\$120.00	15%	25%	\$0.00	0	0	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	160,752.74	45	\$126,270.00	15%	35%	\$0.07	225	233	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	-5,278.02	20	\$820.00	15%	35%	\$0.05	-8	-8	BEST Simulation
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	Existing	39,244.00	45	\$69,280.00	15%	35%	\$0.11	54	57	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	30,794.45	20	\$35,000.00	15%	50%	\$0.08	74	78	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	119,740.03	45	\$77,100.00	15%	35%	\$0.06	170	173	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	46,837.90	3	\$61,000.00	10%	75%	\$0.25	208	220	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	Existing	0.00	14	\$181,500.00	3%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	33,836.71	3	\$31,750.00	0%	3%	\$0.16	7	8	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	208,955.05	20	\$400,000.00	10%	30%	\$0.09	90	90	AEG research & analysis
Large Retail	Heating	Air Source Heat Pump - EER 11.0, COP 3.3	per 100,000 sqft Large Retail bldg.	New	11,039.42	23	\$138,868.37	1%	at stock turnover	\$0.00	0	0	BEST Simulation
Large Retail	Heating	Commissioning	per 100,000 sqft Large Retail bldg.	New	42,727.21	3	\$96,000.00	10%	75%	\$0.42	60	60	6th Plan
Large Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	23,748.73	10	\$15,000.00	15%	50%	\$0.07	18	18	AEG research & analysis
Large Retail	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Large Retail bldg.	New	324,443.32	15	\$3,570.00	15%	25%	\$0.00	60	60	Developed from RTF
Large Retail	Heating	Energy Management System	per 100,000 sqft Large Retail bldg.	New	40,138.24	15	\$31,750.00	20%	65%	\$0.05	39	39	BEST Simulation
Large Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Large Retail bldg.	New	28,490.64	23	\$72,425.87	1%	at stock turnover	\$0.06	1	1	BEST Simulation
Large Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	15,158.74	18	\$110.00	15%	25%	\$0.00	3	3	BEST Simulation
Large Retail	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	157,300.32	45	\$126,270.00	15%	50%	\$0.07	119	119	BEST Simulation
Large Retail	Heating	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Insulation - Foundation - R-10	per 100,000 sqft Large Retail bldg.	New	36,029.76	45	\$69,280.00	15%	50%	\$0.11	27	27	BPA
Large Retail	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	29,350.69	20	\$35,000.00	15%	50%	\$0.08	22	22	BEST Simulation
Large Retail	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	12,369.08	45	\$77,100.00	15%	50%	\$0.47	9	9	BEST Simulation
Large Retail	Heating	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Large Retail bldg.	New	0.00	14	\$181,500.00	6%	75%	\$10.00	0	0	DEER
Large Retail	Heating	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	30,867.01	3	\$31,750.00	0%	3%	\$0.18	3	3	BEST Simulation
Large Retail	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	10,318.86	15	\$31,750.00	20%	65%	\$0.05	213	347	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	738.06	15	-\$28.50	100%	at stock turnover	-\$0.01	8	13	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	941.01	15	\$225.77	100%	at stock turnover	\$0.01	2,416	2,243	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	Existing	49,178.92	5	\$189,170.00	5%	15%	\$0.61	71	155	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	Existing	78,276.71	5	\$11,570.00	15%	50%	\$0.03	436	821	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	Existing	57,187.81	12	\$40,000.00	3%	25%	\$0.06	547	1,175	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	Existing	8,252.16	16	\$7,290.00	1%	3%	\$0.06	7	18	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	61,383.88	10	\$30,170.00	7%	45%	\$0.05	738	2,190	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	Existing	0.00	25	\$41,000.00	15%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$33,000.00	7%	15%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	Existing	7,712.98	5	\$11,000.00	10%	25%	\$0.18	12	42	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	197.11	15	\$37.14	100%	at stock turnover	\$0.03	6,371	6,209	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	46.12	15	\$3.95	100%	at stock turnover	\$0.01	0	4	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	9,144.04	3	\$61,000.00	10%	75%	\$0.25	257	444	6th Plan
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	211.96	6	\$4.40	100%	at stock turnover	\$0.00	0	6	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	172.52	15	\$80.12	100%	at stock turnover	\$0.03	1,663	1,899	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	7,926.79	3	\$31,750.00	0%	3%	\$0.16	10	28	BEST Simulation
Large Retail	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	45,336.36	20	\$400,000.00	10%	30%	\$0.09	132	205	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Commissioning	per 100,000 sqft Large Retail bldg.	New	7,808.56	3	\$96,000.00	10%	75%	\$0.42	73	114	6th Plan
Large Retail	Interior Lighting	Energy Management System	per 100,000 sqft Large Retail bldg.	New	8,888.90	15	\$31,750.00	20%	65%	\$0.05	58	91	BEST Simulation
Large Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	738.06	15	-\$28.50	100%	at stock turnover	-\$0.01	6	9	EIA 2011
Large Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	941.01	15	\$225.77	100%	at stock turnover	\$0.01	998	932	EIA 2011
Large Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Large Retail bldg.	New	42,910.98	5	\$189,170.00	5%	15%	\$0.67	21	32	Illinois TRM
Large Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Large Retail bldg.	New	69,320.76	5	\$11,570.00	15%	50%	\$0.03	119	184	Illinois TRM
Large Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Large Retail bldg.	New	50,466.12	12	\$40,000.00	4%	25%	\$0.07	151	234	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Large Retail bldg.	New	7,290.13	16	\$7,290.00	1%	3%	\$0.07	2	3	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	52,609.34	10	\$30,170.00	22%	45%	\$0.06	81	269	Ameren Missouri TRM
Large Retail	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Large Retail bldg.	New	0.00	25	\$41,000.00	18%	75%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$33,000.00	7%	15%	\$10.00	0	0	DEER
Large Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Large Retail bldg.	New	5,322.52	5	\$11,000.00	10%	25%	\$0.25	3	6	AEG research & analysis
Large Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	197.11	15	\$37.14	100%	at stock turnover	\$0.03	2,629	2,596	EIA 2011
Large Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	46.12	15	\$3.95	100%	at stock turnover	\$0.01	0	3	EIA 2011
Large Retail	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Large Retail	Interior Lighting	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	211.96	6	\$4.40	100%	at stock turnover	\$0.00	0	5	EIA 2011
Large Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	172.52	15	\$80.12	100%	at stock turnover	\$0.03	690	724	EIA 2011
Large Retail	Interior Lighting	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	6,775.79	3	\$31,750.00	0%	3%	\$0.18	4	6	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	375.18	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	Existing	5.49	7	\$30.00	1%	3%	\$1.05	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	Existing	268.58	10	\$190.00	1%	3%	\$0.11	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	Existing	5,330.53	15	\$8,370.00	15%	75%	\$0.19	32	32	AEG research & analysis
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	Existing	1,568.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Large Retail bldg.	Existing	281.48	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,695.67	3	\$31,750.00	0%	3%	\$0.16	6	6	BEST Simulation
Large Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	446.45	7	\$1,400.00	1%	2%	\$0.17	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Large Retail bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Large Retail	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Large Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Large Retail bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Large Retail bldg.	New	5,330.53	15	\$8,370.00	15%	75%	\$0.19	11	11	AEG research & analysis
Large Retail	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Large Retail bldg.	New	1,568.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Large Retail	Miscellaneous	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	4,537.80	3	\$31,750.00	0%	3%	\$0.18	2	2	BEST Simulation
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	13,315.58	6	\$99.91	100%	at stock turnover	\$0.00	113	120	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	Existing	1,098.84	4	\$2,650.00	10%	50%	\$0.66	69	79	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,621.54	6	\$64.98	100%	at stock turnover	\$0.01	22	24	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,316.08	6	\$156.60	100%	at stock turnover	\$0.01	8	8	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	3,288.80	5	\$4,000.00	10%	25%	\$0.29	79	89	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	406.25	6	\$3.05	100%	at stock turnover	\$0.00	6	7	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	3,615.00	6	\$46.22	100%	at stock turnover	\$0.00	7	7	ENERGY STAR Calculator
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	Existing	2,429.26	6	\$14.95	82%	at stock turnover	\$0.00	48	50	Assumed same as Desktop
Large Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Large Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	13,315.58	6	\$99.91	100%	at stock turnover	\$0.00	45	45	ENERGY STAR Calculator
Large Retail	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Large Retail bldg.	New	1,237.40	4	\$2,650.00	10%	50%	\$0.57	24	25	Developed from RTF
Large Retail	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,621.54	6	\$64.98	100%	at stock turnover	\$0.01	9	9	ENERGY STAR Calculator
Large Retail	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,316.08	6	\$156.60	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Large Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	3,763.88	5	\$4,000.00	10%	25%	\$0.25	27	29	5th Plan
Large Retail	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	406.25	6	\$3.05	100%	at stock turnover	\$0.00	2	2	Assumed same as Desktop
Large Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	3,615.00	6	\$46.22	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Large Retail bldg.	New	2,429.26	6	\$17.94	98%	at stock turnover	\$0.00	18	18	Assumed same as Desktop
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	Existing	6,317.27	9	\$372.29	52%	at stock turnover	\$0.01	21	19	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	Existing	2,672.84	8	\$2,540.00	0%	25%	\$0.16	14	14	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	Existing	1,232.00	9	\$110.00	0%	25%	\$0.01	1	1	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	Existing	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	Existing	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	Existing	1,859.01	15	\$30,420.00	0%	25%	\$1.83	31	34	Developed from RTF
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	Existing	3,839.65	15	\$5,390.00	0%	25%	\$0.16	65	70	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	Existing	3,822.51	4	\$10.00	0%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	Existing	14,571.93	10	\$2,213.13	52%	at stock turnover	\$0.04	140	123	EIA 2011
Large Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Large Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Large Retail bldg.	New	6,317.27	9	\$558.43	79%	at stock turnover	\$0.01	12	11	EIA 2011
Large Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Large Retail bldg.	New	3,241.77	8	\$2,540.00	0%	25%	\$0.14	6	6	Developed from RTF
Large Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Large Retail bldg.	New	1,232.00	9	\$110.00	0%	25%	\$0.01	0	0	PacifiCorp Program Data
Large Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Large Retail bldg.	New	0.00	4	\$2,310.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Large Retail bldg.	New	0.00	16	\$160.00	0%	25%	\$10.00	0	0	DEER
Large Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Large Retail bldg.	New	1,806.96	15	\$30,420.00	0%	25%	\$1.89	12	13	Developed from RTF
Large Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Large Retail bldg.	New	3,713.25	15	\$5,390.00	0%	25%	\$0.17	25	26	AEO 2013
Large Retail	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Large Retail bldg.	New	3,820.44	4	\$10.00	0%	25%	\$0.00	0	0	Developed from RTF
Large Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Large Retail bldg.	New	14,571.93	10	\$3,319.69	79%	at stock turnover	\$0.07	85	78	EIA 2011
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$26,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	Existing	5,611.46	15	\$31,750.00	20%	65%	\$0.05	49	63	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	Existing	3,065.16	18	\$120.00	15%	25%	\$0.00	6	8	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	Existing	6,447.66	50	\$250,000.00	15%	25%	\$0.79	12	19	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	Existing	130.18	45	\$126,270.00	15%	35%	\$0.07	0	1	BEST Simulation
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	Existing	8.09	20	\$820.00	15%	35%	\$0.05	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	Existing	3,555.36	20	\$35,000.00	15%	50%	\$0.08	24	31	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	Existing	1,046.25	45	\$77,100.00	15%	35%	\$0.06	4	5	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	Existing	6,550.72	3	\$61,000.00	10%	75%	\$0.25	79	106	6th Plan
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	Existing	4,732.32	3	\$31,750.00	0%	3%	\$0.16	3	5	BEST Simulation
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	Existing	1,702.33	15	\$22,000.00	15%	75%	\$1.33	19	25	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	Existing	16,147.61	18	\$17,000.00	15%	35%	\$0.10	61	80	DEER
Large Retail	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Large Retail bldg.	Existing	72,260.03	20	\$65,358.67	100%	at stock turnover	\$0.09	277	280	BEST Simulation
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	Existing	47,813.68	15	\$6,930.00	13%	50%	\$0.02	361	437	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	19,735.68	20	\$400,000.00	10%	30%	\$0.09	28	29	AEG research & analysis
Large Retail	Ventilation	Commissioning	per 100,000 sqft Large Retail bldg.	New	4,006.97	3	\$96,000.00	10%	75%	\$0.42	18	19	6th Plan
Large Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$26,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Large Retail bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Large Retail	Ventilation	Energy Management System	per 100,000 sqft Large Retail bldg.	New	3,581.17	15	\$31,750.00	20%	65%	\$0.05	11	12	BEST Simulation
Large Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Large Retail bldg.	New	1,755.12	18	\$110.00	15%	25%	\$0.00	1	1	BEST Simulation
Large Retail	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Large Retail bldg.	New	3,909.86	50	\$250,000.00	15%	25%	\$1.03	3	3	6th Plan
Large Retail	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Large Retail bldg.	New	-1,567.99	45	\$126,270.00	15%	50%	\$0.07	-4	-4	BEST Simulation
Large Retail	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$820.00	15%	25%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Large Retail bldg.	New	2,271.09	20	\$35,000.00	15%	50%	\$0.08	6	6	BEST Simulation
Large Retail	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Large Retail bldg.	New	134.31	45	\$77,100.00	15%	50%	\$0.47	0	0	BEST Simulation
Large Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Ventilation	Retrocommissioning	per 100,000 sqft Large Retail bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Ventilation	Strategic Energy Management	per 100,000 sqft Large Retail bldg.	New	2,894.71	3	\$31,750.00	0%	3%	\$0.18	1	1	BEST Simulation
Large Retail	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Large Retail bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Large Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Large Retail bldg.	New	1,032.32	15	\$13,000.00	15%	75%	\$1.19	4	5	6th Plan
Large Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Large Retail bldg.	New	9,937.80	18	\$17,000.00	15%	35%	\$0.16	14	15	DEER
Large Retail	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Large Retail bldg.	New	30,979.76	15	\$6,930.00	19%	50%	\$0.03	67	70	BEST Simulation
Large Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Large Retail bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	9,692.45	5	\$18,000.00	3%	75%	\$0.39	76	81	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	Existing	959.65	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	Existing	58,652.24	20	\$1,120.00	0%	2%	\$0.00	10	11	Developed from RTF (Residential)
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	10,128.92	5	\$4,000.00	1%	10%	\$0.09	10	11	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	Existing	26,742.27	5	\$1,320.00	25%	65%	\$0.01	45	121	DEER
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	Existing	0.00	15	\$740.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	Existing	369.43	15	\$30.00	15%	75%	\$0.01	2	3	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	Existing	6,513.01	15	\$4,420.00	16%	75%	\$0.08	43	44	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	Existing	22,388.83	20	\$25,000.00	1%	30%	\$0.10	71	75	BEST Simulation
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	Existing	2,237.26	13	\$104.92	45%	at stock turnover	\$0.01	17	16	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	Existing	9,284.87	5	\$18,000.00	3%	75%	\$0.39	72	79	AEG study for PN&L
Large Retail	Water Heating	Advanced New Construction Designs	per 100,000 sqft Large Retail bldg.	New	30,392.71	20	\$400,000.00	10%	30%	\$0.09	20	20	AEG research & analysis
Large Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	9,098.74	5	\$18,000.00	6%	75%	\$0.39	21	21	AEG study for PN&L
Large Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Large Retail bldg.	New	904.89	7	\$1,400.00	1%	2%	\$0.17	0	0	Developed from RTF
Large Retail	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Large Retail bldg.	New	58,510.56	20	\$1,120.00	0%	2%	\$0.00	4	4	Developed from RTF (Residential)
Large Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Large Retail bldg.	New	10,191.75	5	\$4,000.00	0%	75%	\$0.09	25	25	AEG study for LA Dept of Water & Power
Large Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Large Retail bldg.	New	26,650.04	5	\$1,320.00	25%	65%	\$0.01	13	35	DEER
Large Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Large Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Large Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Large Retail bldg.	New	0.00	15	\$740.00	0%	0%	\$10.00	0	0	Hawaii TRM
Large Retail	Water Heating	Water Heater - Install Timer	per 100,000 sqft Large Retail bldg.	New	369.82	15	\$30.00	15%	75%	\$0.01	1	1	DEER
Large Retail	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Large Retail bldg.	New	6,580.28	15	\$4,420.00	1%	75%	\$0.08	16	16	BEST Simulation
Large Retail	Water Heating	Water Heater - Solar System	per 100,000 sqft Large Retail bldg.	New	20,965.71	20	\$25,000.00	1%	30%	\$0.10	20	20	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Large Retail	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Large Retail bldg.	New	2,237.26	13	\$104.92	45%	at stock turnover	\$0.01	8	7	BEST Simulation
Large Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Large Retail bldg.	New	8,752.04	5	\$18,000.00	6%	75%	\$0.39	20	20	AEG study for PN&L
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	53,086.33	23	\$82,391.13	2%	at stock turnover	\$0.04	57	54	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	Existing	11,242.44	23	\$5,551.15	5%	at stock turnover	\$0.05	19	19	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	7,654.22	10	\$814.00	15%	75%	\$0.02	22	24	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	3,326.12	15	\$1,617.00	15%	75%	\$0.05	9	11	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	Existing	122.35	15	\$781.00	15%	75%	\$0.60	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	De-stratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	Existing	19,093.48	12	\$24,750.00	15%	30%	\$0.15	229	274	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	3,395.69	10	\$8,250.00	15%	35%	\$0.07	55	60	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	39,383.72	15	\$3,569.50	15%	75%	\$0.00	339	784	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	Existing	12,934.38	15	\$58,875.64	5%	at stock turnover	\$0.56	50	47	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	72,314.33	23	\$104,801.45	1%	at stock turnover	\$0.02	7	7	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	Existing	18,692.18	10	\$6,396.50	18%	75%	\$0.05	238	550	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	6,520.05	50	\$137,500.00	15%	25%	\$0.93	51	63	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	-5,063.77	45	\$69,448.50	15%	35%	\$0.13	-81	-90	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	5,618.12	45	\$38,104.00	15%	35%	\$0.12	90	100	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	3,612.81	20	\$19,250.00	15%	50%	\$0.08	101	112	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	-3,771.27	45	\$42,405.00	15%	35%	\$0.06	-61	-67	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	Existing	22,882.15	15	\$15,468.03	31%	at stock turnover	\$0.08	642	596	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	6,629.64	3	\$33,550.00	10%	75%	\$0.28	342	383	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	Existing	6,150.48	23	\$12,655.63	19%	at stock turnover	\$0.21	16	16	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$28,138.00	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	Existing	20,921.18	23	\$8,399.13	25%	at stock turnover	\$0.04	307	305	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	6,037.31	10	\$814.00	15%	75%	\$0.02	82	97	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	Existing	8,390.14	4	\$814.00	15%	75%	\$0.03	112	137	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	Existing	5,479.20	15	\$1,617.00	15%	75%	\$0.03	72	91	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	Existing	141.37	15	\$7,425.00	15%	75%	\$4.49	2	2	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	27,517.33	20	\$220,000.00	10%	25%	\$0.08	168	173	AEG research & analysis
Lodging	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	55,484.05	23	\$64,854.57	2%	at stock turnover	\$0.04	52	50	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 55,000 sqft Lodging bldg.	New	10,230.01	23	\$5,304.69	6%	at stock turnover	\$0.05	17	17	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	6,340.90	10	\$814.00	15%	75%	\$0.02	9	9	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	3,058.81	15	\$1,617.00	15%	75%	\$0.05	4	4	BEST Simulation
Lodging	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$781.00	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Commissioning	per 55,000 sqft Lodging bldg.	New	5,591.78	3	\$52,800.00	10%	75%	\$0.48	147	152	6th Plan
Lodging	Cooling	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$16,901.50	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Data Center - Air Flow Optimization and Commissioning	per 55,000 sqft Lodging bldg.	New	0.00	15	\$115,500.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Cooling	Destratification Fans (HVLS)	per 55,000 sqft Lodging bldg.	New	15,993.07	12	\$24,750.00	15%	30%	\$0.17	97	100	Environment Design Guide, November 2007 (PDF)
Lodging	Cooling	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	2,967.37	10	\$8,250.00	15%	50%	\$0.07	42	44	AEG research & analysis
Lodging	Cooling	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	32,089.66	15	\$3,569.50	15%	75%	\$0.00	139	287	Developed from RTF
Lodging	Cooling	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Evaporative Cooling - Indirect/Direct	per 55,000 sqft Lodging bldg.	New	12,934.38	15	\$76,372.48	6%	at stock turnover	\$0.72	38	35	PacifiCorp Program Data
Lodging	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	75,667.64	23	\$82,494.96	1%	at stock turnover	\$0.02	20	20	BEST Simulation
Lodging	Cooling	HVAC - Chilled Water Pipe Insulation	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	HVAC - Economizer	per 55,000 sqft Lodging bldg.	New	17,413.59	10	\$6,396.50	18%	75%	\$0.05	40	233	DEER
Lodging	Cooling	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	5,459.55	50	\$137,500.00	15%	25%	\$1.11	22	23	6th Plan
Lodging	Cooling	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	-2,736.49	45	\$69,448.50	15%	50%	\$0.25	-39	-40	BEST Simulation
Lodging	Cooling	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	4,754.68	45	\$38,104.00	15%	50%	\$0.12	68	70	BPA
Lodging	Cooling	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	3,063.97	20	\$19,250.00	15%	50%	\$0.09	44	45	BEST Simulation
Lodging	Cooling	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	-65.42	45	\$42,405.00	15%	50%	\$0.48	-1	-1	BEST Simulation
Lodging	Cooling	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	PTAC - EER 12.2	per 55,000 sqft Lodging bldg.	New	20,114.66	15	\$14,685.41	40%	at stock turnover	\$0.08	380	346	BEST Simulation
Lodging	Cooling	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Cooling	RTU - EER 12.0	per 55,000 sqft Lodging bldg.	New	5,096.03	23	\$11,573.19	25%	at stock turnover	\$0.24	12	13	BEST Simulation
Lodging	Cooling	RTU - Evaporative Precooler	per 55,000 sqft Lodging bldg.	New	0.00	15	\$28,138.00	15%	75%	\$10.00	0	0	DEER
Lodging	Cooling	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 55,000 sqft Lodging bldg.	New	19,204.32	23	\$8,026.23	32%	at stock turnover	\$0.04	262	262	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 55,000 sqft Lodging bldg.	New	4,696.55	10	\$814.00	15%	75%	\$0.02	31	34	DEER
Lodging	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 55,000 sqft Lodging bldg.	New	6,602.86	4	\$814.00	15%	75%	\$0.03	44	47	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 55,000 sqft Lodging bldg.	New	4,687.47	15	\$1,617.00	15%	75%	\$0.03	31	34	BEST Simulation
Lodging	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 55,000 sqft Lodging bldg.	New	0.00	15	\$7,425.00	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Cooling	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	1,926.31	5	\$1,083.50	15%	25%	\$0.10	36	73	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	766.58	10	\$3,586.00	33%	60%	\$0.48	38	81	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	Existing	11,070.34	10	\$5,615.50	15%	30%	\$0.06	320	619	AEG research & analysis
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	812.82	15	-\$41.85	100%	at stock turnover	-\$0.02	7	12	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,036.33	15	\$331.52	100%	at stock turnover	\$0.01	2,047	1,912	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	210.58	15	\$38.75	100%	at stock turnover	\$0.03	153	150	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	50.59	15	\$5.78	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	636.42	3	\$33,550.00	10%	75%	\$0.28	77	126	6th Plan
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	208.46	6	\$5.77	100%	at stock turnover	\$0.01	0	2	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	169.66	15	\$105.06	100%	at stock turnover	\$0.04	543	621	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	3,098.33	20	\$220,000.00	10%	25%	\$0.08	35	53	AEG research & analysis
Lodging	Exterior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	530.41	3	\$52,800.00	10%	75%	\$0.48	26	39	6th Plan
Lodging	Exterior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	1,617.97	5	\$1,083.50	15%	25%	\$0.10	12	18	Illinois TRM
Lodging	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	839.72	10	\$3,586.00	44%	60%	\$0.40	10	15	AEG research & analysis
Lodging	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 55,000 sqft Lodging bldg.	New	9,543.92	10	\$5,615.50	15%	30%	\$0.06	108	165	AEG research & analysis
Lodging	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	812.82	15	-\$41.85	100%	at stock turnover	-\$0.02	6	11	EIA 2011
Lodging	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,036.33	15	\$331.52	100%	at stock turnover	\$0.01	1,079	1,021	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	210.58	15	\$38.75	100%	at stock turnover	\$0.03	78	78	EIA 2011
Lodging	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	50.59	15	\$5.78	100%	at stock turnover	\$0.01	0	0	EIA 2011
Lodging	Exterior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	208.46	6	\$5.77	100%	at stock turnover	\$0.01	0	2	EIA 2011
Lodging	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	169.66	15	\$105.06	100%	at stock turnover	\$0.04	284	298	EIA 2011
Lodging	Exterior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	48,142.05	15	\$370.00	30%	at stock turnover	\$0.00	349	342	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	4,906.47	10	\$274.88	21%	at stock turnover	\$0.01	87	75	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	8,317.97	18	\$1,667.83	30%	at stock turnover	\$0.02	46	46	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	8,833.95	10	\$406.57	14%	at stock turnover	\$0.01	69	60	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Food Preparation	Dishwasher - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	48,142.05	15	\$481.00	39%	at stock turnover	\$0.00	262	252	Illinois TRM
Lodging	Food Preparation	Fryer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	4,906.47	10	\$357.34	27%	at stock turnover	\$0.01	55	50	Developed from RTF "ComCookingConvectionFryer" v2.0
Lodging	Food Preparation	Hot Food Container - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	8,317.97	18	\$2,168.18	39%	at stock turnover	\$0.03	30	29	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Lodging	Food Preparation	Oven - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	8,833.95	10	\$528.54	18%	at stock turnover	\$0.01	44	40	Developed from RTF "ComCookingConvectionOven" v2.0
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	Existing	25,425.64	23	\$29,235.38	2%	at stock turnover	\$0.04	27	25	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	11,338.73	10	\$8,250.00	15%	35%	\$0.07	85	90	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	Existing	172,198.20	15	\$3,569.50	15%	75%	\$0.00	1,898	3,796	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	Existing	39,774.98	23	\$23,876.58	1%	at stock turnover	\$0.02	4	4	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	43,234.37	45	\$69,448.50	15%	35%	\$0.13	318	344	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	Existing	18,738.63	45	\$38,104.00	15%	35%	\$0.12	139	149	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	14,702.32	20	\$19,250.00	15%	50%	\$0.08	191	205	BEST Simulation
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	56,138.68	45	\$42,405.00	15%	35%	\$0.06	424	447	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	22,167.89	3	\$33,550.00	10%	75%	\$0.29	525	574	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	Existing	0.00	14	\$225,522.00	3%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	104,080.51	20	\$220,000.00	10%	25%	\$0.08	228	228	AEG research & analysis
Lodging	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 55,000 sqft Lodging bldg.	New	11,639.09	23	\$23,728.47	2%	at stock turnover	\$0.04	10	9	BEST Simulation
Lodging	Heating	Commissioning	per 55,000 sqft Lodging bldg.	New	21,030.15	3	\$52,800.00	10%	75%	\$0.48	199	199	6th Plan
Lodging	Heating	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$16,901.50	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	11,223.67	10	\$8,250.00	15%	50%	\$0.07	57	57	AEG research & analysis
Lodging	Heating	Ductless Mini Split Heat Pump	per 55,000 sqft Lodging bldg.	New	172,198.20	15	\$3,569.50	15%	75%	\$0.00	694	1,388	Developed from RTF
Lodging	Heating	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 55,000 sqft Lodging bldg.	New	40,582.27	23	\$18,794.57	1%	at stock turnover	\$0.02	10	10	BEST Simulation
Lodging	Heating	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	22,429.29	45	\$69,448.50	15%	50%	\$0.25	114	114	BEST Simulation
Lodging	Heating	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Insulation - Foundation - R-10	per 55,000 sqft Lodging bldg.	New	17,956.77	45	\$38,104.00	15%	50%	\$0.12	91	92	BPA
Lodging	Heating	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	14,124.13	20	\$19,250.00	15%	50%	\$0.09	72	72	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Heating	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	6,088.65	45	\$42,405.00	15%	50%	\$0.48	31	31	BEST Simulation
Lodging	Heating	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Heating	Space Heating - Heat Recovery Ventilator	per 55,000 sqft Lodging bldg.	New	0.00	14	\$225,522.00	6%	75%	\$10.00	0	0	DEER
Lodging	Heating	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Heating	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	687.01	15	-\$35.37	100%	at stock turnover	-\$0.02	3	5	EIA 2011
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	875.93	15	\$280.20	100%	at stock turnover	\$0.01	846	790	EIA 2011
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	Existing	6,137.62	5	\$22,715.00	5%	15%	\$0.60	37	78	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	Existing	8,996.16	5	\$4,829.00	15%	50%	\$0.10	198	392	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	Existing	15,616.48	12	\$22,000.00	3%	25%	\$0.11	535	1,399	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	Existing	2,372.29	16	\$3,041.50	1%	3%	\$0.08	8	24	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	16,999.10	10	\$12,589.50	7%	45%	\$0.07	743	2,633	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	Existing	0.00	25	\$26,647.50	15%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$13,260.50	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	Existing	10,175.48	5	\$6,050.00	10%	25%	\$0.08	72	220	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	206.13	15	\$37.93	100%	at stock turnover	\$0.03	3,141	3,087	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	49.52	15	\$5.66	100%	at stock turnover	\$0.01	0	5	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	2,509.44	3	\$33,550.00	10%	75%	\$0.28	252	498	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	216.34	6	\$5.99	100%	at stock turnover	\$0.01	0	35	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	176.08	15	\$109.03	100%	at stock turnover	\$0.04	9,197	10,509	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	12,299.61	20	\$220,000.00	10%	25%	\$0.08	125	213	AEG research & analysis
Lodging	Interior Lighting	Commissioning	per 55,000 sqft Lodging bldg.	New	2,024.31	3	\$52,800.00	10%	75%	\$0.48	88	151	6th Plan
Lodging	Interior Lighting	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	687.01	15	-\$35.37	100%	at stock turnover	-\$0.02	3	5	EIA 2011
Lodging	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	875.93	15	\$280.20	100%	at stock turnover	\$0.01	446	422	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 55,000 sqft Lodging bldg.	New	5,502.68	5	\$22,715.00	5%	15%	\$0.65	13	21	Illinois TRM
Lodging	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 55,000 sqft Lodging bldg.	New	8,114.80	5	\$4,829.00	15%	50%	\$0.10	69	109	Illinois TRM
Lodging	Interior Lighting	Interior Lighting - Daylighting Controls	per 55,000 sqft Lodging bldg.	New	12,603.97	12	\$22,000.00	4%	25%	\$0.14	174	297	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - LED Exit Lighting	per 55,000 sqft Lodging bldg.	New	1,917.38	16	\$3,041.50	1%	3%	\$0.11	3	4	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	13,730.86	10	\$12,589.50	22%	45%	\$0.09	98	359	Ameren Missouri TRM
Lodging	Interior Lighting	Interior Lighting - Skylights	per 55,000 sqft Lodging bldg.	New	0.00	25	\$26,647.50	18%	25%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 55,000 sqft Lodging bldg.	New	0.00	8	\$13,260.50	7%	15%	\$10.00	0	0	DEER
Lodging	Interior Lighting	Interior Screw-in - Task Lighting	per 55,000 sqft Lodging bldg.	New	7,676.19	5	\$6,050.00	10%	25%	\$0.10	24	44	AEG research & analysis
Lodging	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	206.13	15	\$37.93	100%	at stock turnover	\$0.03	1,603	1,600	EIA 2011
Lodging	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	49.52	15	\$5.66	100%	at stock turnover	\$0.01	0	3	EIA 2011
Lodging	Interior Lighting	Lodging - Guest Room Controls	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Interior Lighting	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	216.34	6	\$5.99	100%	at stock turnover	\$0.01	0	35	EIA 2011
Lodging	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	176.08	15	\$109.03	100%	at stock turnover	\$0.04	4,815	5,051	EIA 2011
Lodging	Interior Lighting	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	116.68	7	\$1,397.00	1%	8%	\$0.25	1	1	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	Existing	1.71	7	\$33.00	1%	3%	\$3.71	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	Existing	83.43	10	\$192.50	1%	3%	\$0.34	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	Existing	0.00	13	\$0.00	91%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	Existing	1,748.72	15	\$8,272.00	15%	75%	\$0.57	97	97	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	Existing	1,220.57	10	\$210.89	27%	at stock turnover	\$0.03	26	24	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	Existing	438.01	10	\$452.13	76%	at stock turnover	\$0.15	26	24	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	Existing	17.11	5	\$60.50	15%	75%	\$0.74	1	1	AEG research & analysis
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	127.68	7	\$1,397.00	1%	4%	\$0.25	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Miscellaneous	ENERGY STAR Battery Chargers	per 55,000 sqft Lodging bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Lodging	Miscellaneous	ENERGY STAR Water Cooler	per 55,000 sqft Lodging bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Lodging	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 55,000 sqft Lodging bldg.	New	0.00	13	\$0.00	100%	at stock turnover	\$10.00	0	0	AEG research & analysis
Lodging	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 55,000 sqft Lodging bldg.	New	1,748.72	15	\$8,272.00	15%	75%	\$0.57	39	39	AEG research & analysis
Lodging	Miscellaneous	Pool Heater - Heat Pump	per 55,000 sqft Lodging bldg.	New	1,220.57	10	\$253.07	32%	at stock turnover	\$0.03	16	15	AEG research & analysis
Lodging	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 55,000 sqft Lodging bldg.	New	438.01	10	\$542.56	91%	at stock turnover	\$0.19	15	15	Hawaii TRM
Lodging	Miscellaneous	Pool Pump - Timer	per 55,000 sqft Lodging bldg.	New	16.50	5	\$60.50	15%	75%	\$0.74	0	0	AEG research & analysis
Lodging	Miscellaneous	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$550,000.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	2,240.99	6	\$16.81	100%	at stock turnover	\$0.00	78	82	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	Existing	118.31	4	\$1,457.50	10%	50%	\$3.38	30	34	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	441.20	6	\$10.94	100%	at stock turnover	\$0.01	15	16	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	389.79	6	\$26.35	100%	at stock turnover	\$0.01	5	6	ENERGY STAR Calculator
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	349.65	5	\$2,200.00	10%	25%	\$1.46	34	37	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	455.81	6	\$1.98	58%	at stock turnover	\$0.00	17	18	Assumed same as Desktop
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	486.72	6	\$6.22	100%	at stock turnover	\$0.00	4	4	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	Existing	1,635.36	6	\$12.27	100%	at stock turnover	\$0.00	149	153	Assumed same as Desktop
Lodging	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 55,000 sqft Lodging bldg.	New	0.00	20	\$165,000.00	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Data Center - Server Virtualization	per 55,000 sqft Lodging bldg.	New	0.00	3	\$10,499.50	0%	0%	\$10.00	0	0	E3T Website
Lodging	Office Equipment	Desktop Computer - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	2,240.99	6	\$16.81	100%	at stock turnover	\$0.00	38	38	ENERGY STAR Calculator
Lodging	Office Equipment	Electronics - Smart Power Strips	per 55,000 sqft Lodging bldg.	New	123.01	4	\$1,457.50	10%	50%	\$3.21	11	12	Developed from RTF
Lodging	Office Equipment	Laptop - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	441.20	6	\$10.94	100%	at stock turnover	\$0.01	7	8	ENERGY STAR Calculator
Lodging	Office Equipment	Monitor - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	389.79	6	\$26.35	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Lodging	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	365.49	5	\$2,200.00	10%	25%	\$1.38	13	14	5th Plan
Lodging	Office Equipment	POS Terminal - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	455.81	6	\$2.18	64%	at stock turnover	\$0.00	9	9	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	486.72	6	\$6.22	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Lodging	Office Equipment	Server - ENERGY STAR	per 55,000 sqft Lodging bldg.	New	1,635.36	6	\$12.27	100%	at stock turnover	\$0.00	63	63	Assumed same as Desktop
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,629.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	Existing	2,137.43	9	\$141.59	59%	at stock turnover	\$0.01	32	29	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	Existing	1,232.00	9	\$104.50	0%	10%	\$0.01	2	2	PacifiCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	Existing	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$25,399.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$5,384.50	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	Existing	0.00	4	\$16,890.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	Existing	9,860.76	10	\$1,683.39	59%	at stock turnover	\$0.05	427	375	EIA 2011
Lodging	Refrigeration	Grocery - Display Case - LED Lighting	per 55,000 sqft Lodging bldg.	New	0.00	5	\$1,545.50	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Refrigeration	Grocery - Display Case Motion Sensors	per 55,000 sqft Lodging bldg.	New	0.00	8	\$198.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 55,000 sqft Lodging bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 55,000 sqft Lodging bldg.	New	2,137.43	9	\$184.06	77%	at stock turnover	\$0.01	20	18	EIA 2011
Lodging	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 55,000 sqft Lodging bldg.	New	0.00	8	\$2,541.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 55,000 sqft Lodging bldg.	New	1,232.00	9	\$104.50	0%	10%	\$0.01	1	1	PacificCorp Program Data
Lodging	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 55,000 sqft Lodging bldg.	New	0.00	4	\$2,304.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Evaporator Fan Controls	per 55,000 sqft Lodging bldg.	New	0.00	16	\$159.50	0%	0%	\$10.00	0	0	DEER
Lodging	Refrigeration	Refrigeration - Floating Head Pressure	per 55,000 sqft Lodging bldg.	New	0.00	15	\$25,399.00	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Refrigeration - High Efficiency Compressor	per 55,000 sqft Lodging bldg.	New	0.00	15	\$5,384.50	0%	0%	\$10.00	0	0	AEO 2013
Lodging	Refrigeration	Refrigeration - Strip Curtain	per 55,000 sqft Lodging bldg.	New	0.00	4	\$16,890.50	0%	0%	\$10.00	0	0	Developed from RTF
Lodging	Refrigeration	Vending Machine - 1,820 kWh/yr	per 55,000 sqft Lodging bldg.	New	9,860.76	10	\$2,188.40	77%	at stock turnover	\$0.06	320	296	EIA 2011
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$52,800.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$16,901.50	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	Existing	0.00	10	\$8,250.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	Existing	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	Existing	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	Existing	4,208.14	50	\$137,500.00	15%	25%	\$0.93	35	47	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	Existing	466.94	45	\$69,448.50	15%	35%	\$0.13	8	9	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	Existing	2,293.55	20	\$19,250.00	15%	50%	\$0.08	68	82	BEST Simulation
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	Existing	683.27	45	\$42,405.00	15%	35%	\$0.06	12	14	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	Existing	4,277.89	3	\$33,550.00	10%	75%	\$0.28	235	283	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	Existing	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	Existing	0.00	5	\$165.00	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	Existing	1,110.95	15	\$12,100.00	15%	75%	\$1.16	55	68	6th Plan
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	Existing	10,594.43	18	\$9,350.00	15%	35%	\$0.09	182	215	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	Existing	25,545.81	20	\$12,958.84	100%	at stock turnover	\$0.05	274	277	BEST Simulation

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Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	Existing	31,004.64	15	\$929.50	13%	50%	\$0.00	1,049	1,156	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$130,086.00	48%	48%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	16,132.97	20	\$220,000.00	10%	25%	\$0.08	89	90	AEG research & analysis
Lodging	Ventilation	Commissioning	per 55,000 sqft Lodging bldg.	New	3,281.68	3	\$52,800.00	10%	75%	\$0.48	78	79	6th Plan
Lodging	Ventilation	Cool Roofs - Absorbptivity 0.2	per 55,000 sqft Lodging bldg.	New	0.00	15	\$16,901.50	45%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Doors - High Efficiency - R-5	per 55,000 sqft Lodging bldg.	New	0.00	10	\$8,250.00	15%	50%	\$0.00	0	0	AEG research & analysis
Lodging	Ventilation	Energy Management System	per 55,000 sqft Lodging bldg.	New	0.00	15	\$17,462.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 55,000 sqft Lodging bldg.	New	0.00	18	\$22.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Occupancy Sensors	per 55,000 sqft Lodging bldg.	New	0.00	15	\$258.50	15%	75%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 55,000 sqft Lodging bldg.	New	3,183.11	50	\$137,500.00	15%	25%	\$1.11	12	12	6th Plan
Lodging	Ventilation	Insulation - Ceiling - R-38	per 55,000 sqft Lodging bldg.	New	233.21	45	\$69,448.50	15%	50%	\$0.25	3	3	BEST Simulation
Lodging	Ventilation	Insulation - Ducting - R-8	per 55,000 sqft Lodging bldg.	New	0.00	20	\$451.00	15%	50%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Insulation - Radiant Barrier - R-5	per 55,000 sqft Lodging bldg.	New	1,796.15	20	\$19,250.00	15%	50%	\$0.09	23	23	BEST Simulation
Lodging	Ventilation	Insulation - Wall Cavity - R-23	per 55,000 sqft Lodging bldg.	New	109.99	45	\$42,405.00	15%	50%	\$0.48	1	1	BEST Simulation
Lodging	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

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Lodging	Ventilation	Retrocommissioning	per 55,000 sqft Lodging bldg.	New	0.00	3	\$33,550.00	0%	0%	\$10.00	0	0	6th Plan
Lodging	Ventilation	Strategic Energy Management	per 55,000 sqft Lodging bldg.	New	0.00	3	\$17,462.50	0%	0%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Thermostat - Clock/Programmable	per 55,000 sqft Lodging bldg.	New	0.00	5	\$445.50	5%	5%	\$10.00	0	0	BEST Simulation
Lodging	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 55,000 sqft Lodging bldg.	New	848.48	15	\$7,150.00	15%	75%	\$0.86	19	19	6th Plan
Lodging	Ventilation	Ventilation - ECM on VAV Boxes	per 55,000 sqft Lodging bldg.	New	8,138.59	18	\$9,350.00	15%	35%	\$0.11	60	60	DEER
Lodging	Ventilation	Ventilation - Variable Air Volume	per 55,000 sqft Lodging bldg.	New	21,136.11	20	\$11,727.87	100%	at stock turnover	\$0.06	34	35	BEST Simulation
Lodging	Ventilation	Ventilation - Variable Speed Control	per 55,000 sqft Lodging bldg.	New	23,165.47	15	\$929.50	19%	50%	\$0.00	262	263	BEST Simulation
Lodging	Ventilation	Windows - High Efficiency - U-0.35 Window	per 55,000 sqft Lodging bldg.	New	0.00	20	\$130,086.00	66%	66%	\$10.00	0	0	BEST Simulation
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	Existing	0.00	20	\$220,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	23,703.46	5	\$9,900.00	3%	75%	\$0.09	279	300	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	Existing	762.59	7	\$1,397.00	1%	8%	\$0.25	1	1	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	Existing	143,962.71	20	\$1,116.50	0%	3%	\$0.00	61	62	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	27,117.89	5	\$2,200.00	1%	10%	\$0.02	42	43	AEG study for LA Dept of Water & Power
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	Existing	63,597.59	5	\$7,062.00	25%	65%	\$0.03	159	443	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	Existing	9,059.23	15	\$423.50	15%	25%	\$0.01	15	15	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	Existing	175.70	15	\$16.50	15%	75%	\$0.01	2	2	DEER
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	Existing	16,961.66	15	\$3,278.00	16%	75%	\$0.02	168	172	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	Existing	54,737.96	20	\$37,499.00	1%	30%	\$0.06	262	275	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	Existing	5,485.94	13	\$486.26	17%	at stock turnover	\$0.01	64	61	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	Existing	22,707.29	5	\$9,900.00	3%	75%	\$0.09	264	292	AEG study for PN&L
Lodging	Water Heating	Advanced New Construction Designs	per 55,000 sqft Lodging bldg.	New	71,703.32	20	\$220,000.00	10%	25%	\$0.08	66	66	AEG research & analysis
Lodging	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	22,455.65	5	\$9,900.00	6%	75%	\$0.09	95	95	AEG study for PN&L
Lodging	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 55,000 sqft Lodging bldg.	New	731.54	7	\$1,397.00	1%	4%	\$0.25	0	0	Developed from RTF
Lodging	Water Heating	Water Heater - Desuperheater	per 55,000 sqft Lodging bldg.	New	143,613.10	20	\$1,116.50	0%	3%	\$0.00	26	26	Developed from RTF (Residential)
Lodging	Water Heating	Water Heater - Drainwater Heat Recovery	per 55,000 sqft Lodging bldg.	New	27,036.71	5	\$2,200.00	0%	75%	\$0.02	125	126	AEG study for LA Dept of Water & Power
Lodging	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 55,000 sqft Lodging bldg.	New	60,865.38	5	\$7,062.00	25%	65%	\$0.03	56	150	DEER
Lodging	Water Heating	Water Heater - Faucet Motion Sensor Control	per 55,000 sqft Lodging bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Lodging	Water Heating	Water Heater - High Efficiency Circulation Pump	per 55,000 sqft Lodging bldg.	New	9,030.91	15	\$423.50	15%	25%	\$0.01	6	6	Hawaii TRM
Lodging	Water Heating	Water Heater - Install Timer	per 55,000 sqft Lodging bldg.	New	175.98	15	\$16.50	15%	75%	\$0.01	1	1	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lodging	Water Heating	Water Heater - Pipe Insulation	per 55,000 sqft Lodging bldg.	New	16,295.55	15	\$3,278.00	1%	75%	\$0.02	74	74	BEST Simulation
Lodging	Water Heating	Water Heater - Solar System	per 55,000 sqft Lodging bldg.	New	53,103.97	20	\$37,499.00	1%	30%	\$0.06	94	95	BEST Simulation
Lodging	Water Heating	Water Heating - EF 0.89	per 55,000 sqft Lodging bldg.	New	5,485.94	13	\$486.26	17%	at stock turnover	\$0.01	35	34	BEST Simulation
Lodging	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 55,000 sqft Lodging bldg.	New	21,599.71	5	\$9,900.00	6%	75%	\$0.09	91	92	AEG study for PN&L
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	93,222.91	23	\$144,750.76	2%	at stock turnover	\$0.07	127	121	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	Existing	51,004.90	23	\$17,028.38	5%	at stock turnover	\$0.03	123	124	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	40,994.97	10	\$5,430.00	15%	75%	\$0.02	125	137	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	5,384.24	15	\$14,370.00	15%	75%	\$0.26	15	19	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,310.24	15	\$6,880.00	15%	75%	\$0.49	4	5	BEST Simulation
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	6,708.24	10	\$15,000.00	15%	35%	\$0.08	105	118	AEG research & analysis
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	69,235.22	15	\$23,810.00	15%	25%	\$0.01	28	33	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	11,316.55	15	\$31,750.00	20%	65%	\$0.06	403	447	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	Existing	22,745.04	15	\$159,479.11	8%	at stock turnover	\$0.86	151	143	PacifiCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	82,102.78	23	\$119,100.67	1%	at stock turnover	\$0.07	47	47	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	1,151.83	18	\$180.00	15%	50%	\$0.37	19	23	BEST Simulation
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	Existing	46,212.83	10	\$56,550.00	18%	75%	\$0.16	778	1,996	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	12,149.11	50	\$250,000.00	15%	25%	\$1.04	90	117	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	5,187.21	45	\$126,270.00	15%	35%	\$0.07	81	91	BEST Simulation
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	4,868.86	20	\$820.00	15%	50%	\$0.08	134	149	BEST Simulation
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	11,098.29	45	\$69,280.00	15%	35%	\$0.13	172	195	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	7,137.08	20	\$35,000.00	15%	50%	\$0.09	195	219	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	-7,464.90	45	\$77,100.00	15%	35%	\$0.07	-117	-131	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	Existing	40,238.14	15	\$27,200.45	4%	at stock turnover	\$0.08	161	150	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	12,353.27	3	\$61,000.00	10%	75%	\$0.32	607	704	6th Plan
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	Existing	72,877.91	23	\$148,363.93	39%	at stock turnover	\$0.21	425	429	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$248,680.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	8,974.72	3	\$31,750.00	5%	16%	\$0.21	75	103	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	Existing	81,765.49	23	\$25,764.68	19%	at stock turnover	\$0.03	1,014	1,010	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	23,690.73	10	\$5,430.00	15%	75%	\$0.03	274	325	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	Existing	32,922.91	4	\$5,430.00	15%	75%	\$0.04	375	456	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	Existing	5,080.09	15	\$14,370.00	15%	75%	\$0.25	54	74	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	Existing	1,286.54	15	\$66,080.00	15%	75%	\$4.49	13	19	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	50,504.62	20	\$400,000.00	10%	15%	\$0.11	149	154	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	90,945.58	23	\$125,113.64	3%	at stock turnover	\$0.07	169	160	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Miscellaneous bldg.	New	46,043.42	23	\$15,217.89	7%	at stock turnover	\$0.03	152	155	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	33,588.39	10	\$5,430.00	15%	75%	\$0.02	74	76	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	4,382.31	15	\$14,370.00	15%	75%	\$0.29	10	10	BEST Simulation
Miscellaneous	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Miscellaneous bldg.	New	971.98	15	\$6,880.00	15%	75%	\$0.61	2	2	BEST Simulation
Miscellaneous	Cooling	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	9,973.92	3	\$96,000.00	10%	75%	\$0.56	381	394	6th Plan
Miscellaneous	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Miscellaneous bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Miscellaneous	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	5,483.98	10	\$15,000.00	15%	50%	\$0.09	113	117	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	56,336.50	15	\$23,810.00	15%	25%	\$0.01	17	18	Developed from RTF
Miscellaneous	Cooling	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	9,243.47	15	\$31,750.00	20%	65%	\$0.07	246	255	BEST Simulation
Miscellaneous	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Miscellaneous bldg.	New	22,745.04	15	\$232,556.15	11%	at stock turnover	\$1.25	170	156	PacifiCorp Program Data
Miscellaneous	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	80,112.28	23	\$102,943.28	2%	at stock turnover	\$0.06	60	60	BEST Simulation
Miscellaneous	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	1,024.83	18	\$170.00	15%	50%	\$0.00	21	22	BEST Simulation
Miscellaneous	Cooling	HVAC - Economizer	per 100,000 sqft Miscellaneous bldg.	New	36,696.25	10	\$56,550.00	18%	75%	\$0.19	175	1,024	DEER
Miscellaneous	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	9,736.78	50	\$250,000.00	15%	25%	\$1.32	57	59	6th Plan
Miscellaneous	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	-2,254.56	45	\$126,270.00	15%	50%	\$0.09	-47	-48	BEST Simulation
Miscellaneous	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	2,433.31	20	\$820.00	15%	50%	\$0.01	50	52	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	8,941.26	45	\$69,280.00	15%	50%	\$0.14	185	191	BPA
Miscellaneous	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	5,811.89	20	\$35,000.00	15%	50%	\$0.10	120	124	BEST Simulation
Miscellaneous	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	-116.69	45	\$77,100.00	15%	50%	\$0.58	-2	-2	BEST Simulation
Miscellaneous	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	PTAC - EER 12.2	per 100,000 sqft Miscellaneous bldg.	New	35,371.53	15	\$25,824.22	6%	at stock turnover	\$0.08	141	128	BEST Simulation
Miscellaneous	Cooling	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Cooling	RTU - EER 12.0	per 100,000 sqft Miscellaneous bldg.	New	71,186.43	23	\$128,236.64	56%	at stock turnover	\$0.19	582	590	BEST Simulation
Miscellaneous	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$248,680.00	15%	75%	\$10.00	0	0	DEER
Miscellaneous	Cooling	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Miscellaneous bldg.	New	74,550.72	23	\$23,025.33	28%	at stock turnover	\$0.03	1,286	1,286	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	18,204.47	10	\$5,430.00	15%	75%	\$0.04	153	165	DEER
Miscellaneous	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Miscellaneous bldg.	New	25,593.90	4	\$5,430.00	15%	75%	\$0.05	215	231	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Miscellaneous bldg.	New	3,346.57	15	\$14,370.00	15%	75%	\$0.34	28	30	BEST Simulation
Miscellaneous	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Miscellaneous bldg.	New	900.55	15	\$66,080.00	15%	75%	\$5.59	7	8	BEST Simulation
Miscellaneous	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	1,680.89	15	\$31,750.00	20%	65%	\$0.06	149	257	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	5,000.92	5	\$3,150.00	15%	25%	\$0.10	98	218	Illinois TRM
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	1,223.23	10	\$9,260.00	33%	60%	\$0.74	64	147	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	Existing	28,938.21	10	\$14,490.00	15%	30%	\$0.05	888	1,847	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	936.35	15	-\$57.85	100%	at stock turnover	-\$0.02	19	30	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,193.83	15	\$458.28	100%	at stock turnover	\$0.01	5,458	5,081	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	162.64	15	\$35.92	100%	at stock turnover	\$0.03	443	435	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	39.08	15	\$5.36	100%	at stock turnover	\$0.01	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	1,646.40	3	\$61,000.00	10%	75%	\$0.32	208	364	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	188.49	6	\$6.26	100%	at stock turnover	\$0.01	0	7	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	153.41	15	\$114.00	100%	at stock turnover	\$0.05	1,708	1,959	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	1,431.10	3	\$31,750.00	5%	16%	\$0.21	31	84	BEST Simulation
Miscellaneous	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	7,504.34	20	\$400,000.00	10%	15%	\$0.11	41	62	AEG research & analysis
Miscellaneous	Exterior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	1,316.88	3	\$96,000.00	10%	75%	\$0.56	94	142	6th Plan
Miscellaneous	Exterior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	1,358.40	15	\$31,750.00	20%	65%	\$0.07	67	102	BEST Simulation
Miscellaneous	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	3,986.45	5	\$3,150.00	15%	25%	\$0.12	44	66	Illinois TRM
Miscellaneous	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	1,036.97	10	\$9,260.00	44%	60%	\$0.83	18	28	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Miscellaneous bldg.	New	23,431.78	10	\$14,490.00	15%	30%	\$0.06	389	589	AEG research & analysis
Miscellaneous	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	936.35	15	-\$57.85	100%	at stock turnover	-\$0.02	20	32	EIA 2011
Miscellaneous	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,193.83	15	\$458.28	100%	at stock turnover	\$0.01	3,675	3,451	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	162.64	15	\$35.92	100%	at stock turnover	\$0.03	297	296	EIA 2011
Miscellaneous	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	39.08	15	\$5.36	100%	at stock turnover	\$0.01	0	0	EIA 2011
Miscellaneous	Exterior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	188.49	6	\$6.26	100%	at stock turnover	\$0.01	0	8	EIA 2011
Miscellaneous	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	153.41	15	\$114.00	100%	at stock turnover	\$0.04	1,216	1,275	EIA 2011
Miscellaneous	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	22,783.01	15	\$89.87	15%	at stock turnover	\$0.00	94	92	Illinois TRM
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	2,321.97	10	\$185.22	30%	at stock turnover	\$0.01	65	56	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	3,936.44	18	\$405.08	15%	at stock turnover	\$0.01	12	12	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	4,180.63	10	\$821.21	59%	at stock turnover	\$0.03	156	135	Developed from RTF "ComCookingConvectionOven" v2.0
Miscellaneous	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	22,783.01	15	\$125.81	22%	at stock turnover	\$0.00	101	97	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	2,321.97	10	\$259.30	42%	at stock turnover	\$0.02	59	53	Developed from RTF "ComCookingConvectionFryer" v2.0
Miscellaneous	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	3,936.44	18	\$567.12	22%	at stock turnover	\$0.02	11	11	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Miscellaneous	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	4,180.63	10	\$1,149.69	82%	at stock turnover	\$0.04	140	128	Developed from RTF "ComCookingConvectionOven" v2.0
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	Existing	30,565.12	23	\$81,978.74	2%	at stock turnover	\$0.07	41	39	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	20,346.87	10	\$15,000.00	15%	35%	\$0.08	105	110	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	277,117.99	15	\$23,810.00	15%	25%	\$0.01	359	359	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	35,296.21	15	\$31,750.00	20%	65%	\$0.06	425	430	BEST Simulation
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	Existing	31,748.01	23	\$71,489.00	1%	at stock turnover	\$0.07	18	18	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	-2,103.29	18	\$180.00	15%	50%	\$0.37	-11	-13	BEST Simulation
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	138,081.64	45	\$126,270.00	15%	35%	\$0.07	724	748	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	-4,010.82	20	\$820.00	15%	50%	\$0.08	-37	-38	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	Existing	33,619.91	45	\$69,280.00	15%	35%	\$0.13	172	182	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	26,381.33	20	\$35,000.00	15%	50%	\$0.09	238	250	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	102,581.36	45	\$77,100.00	15%	35%	\$0.07	545	555	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	40,032.97	3	\$61,000.00	10%	75%	\$0.32	663	704	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	14	\$185,890.00	3%	75%	\$10.00	0	0	DEER
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	29,001.61	3	\$31,750.00	5%	16%	\$0.21	81	92	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	170,697.09	20	\$400,000.00	10%	15%	\$0.11	116	116	AEG research & analysis
Miscellaneous	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 100,000 sqft Miscellaneous bldg.	New	25,645.29	23	\$74,169.07	3%	at stock turnover	\$0.07	44	42	BEST Simulation
Miscellaneous	Heating	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	35,873.44	3	\$96,000.00	10%	75%	\$0.56	316	316	6th Plan
Miscellaneous	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	18,563.65	10	\$15,000.00	15%	50%	\$0.09	88	88	AEG research & analysis
Miscellaneous	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	276,845.02	15	\$23,810.00	15%	25%	\$0.01	172	172	Developed from RTF
Miscellaneous	Heating	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	32,790.11	15	\$31,750.00	20%	65%	\$0.07	201	201	BEST Simulation
Miscellaneous	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Miscellaneous bldg.	New	24,307.07	23	\$61,790.83	2%	at stock turnover	\$0.06	17	17	BEST Simulation
Miscellaneous	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	3,029.90	18	\$170.00	15%	50%	\$0.00	14	14	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	129,339.65	45	\$126,270.00	15%	50%	\$0.09	616	617	BEST Simulation
Miscellaneous	Heating	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	2,483.26	20	\$820.00	15%	50%	\$0.01	12	12	BEST Simulation
Miscellaneous	Heating	Insulation - Foundation - R-10	per 100,000 sqft Miscellaneous bldg.	New	30,219.37	45	\$69,280.00	15%	50%	\$0.14	143	144	BPA
Miscellaneous	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	23,976.89	20	\$35,000.00	15%	50%	\$0.10	114	114	BEST Simulation
Miscellaneous	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	10,384.49	45	\$77,100.00	15%	50%	\$0.58	49	49	BEST Simulation
Miscellaneous	Heating	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Miscellaneous bldg.	New	0.00	14	\$185,890.00	6%	75%	\$10.00	0	0	DEER
Miscellaneous	Heating	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	4,494.42	15	\$31,750.00	20%	65%	\$0.06	407	688	BEST Simulation
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	753.27	15	-\$46.54	100%	at stock turnover	-\$0.02	10	16	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	960.41	15	\$368.68	100%	at stock turnover	\$0.01	2,912	2,711	EIA 2011
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	Existing	25,484.47	5	\$68,660.00	5%	15%	\$0.44	168	364	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	Existing	40,705.74	5	\$4,720.00	15%	50%	\$0.02	1,032	1,934	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	Existing	26,740.25	12	\$40,000.00	3%	25%	\$0.14	1,157	2,499	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	4,047.61	16	\$2,970.00	1%	3%	\$0.06	16	39	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	28,971.35	10	\$12,310.00	7%	45%	\$0.05	1,594	4,683	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	25	\$123,000.00	15%	25%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Interior Lighting - Timelocks and Timers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$13,550.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	4,907.19	5	\$11,000.00	10%	25%	\$0.29	39	118	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	249.06	15	\$55.00	100%	at stock turnover	\$0.03	14,787	14,503	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	59.84	15	\$8.21	100%	at stock turnover	\$0.01	0	16	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	4,264.70	3	\$61,000.00	10%	75%	\$0.32	542	943	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	250.17	6	\$8.31	100%	at stock turnover	\$0.01	0	21	EIA 2011
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	203.61	15	\$151.30	100%	at stock turnover	\$0.05	5,346	6,131	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,712.65	3	\$31,750.00	5%	16%	\$0.21	80	214	BEST Simulation
Miscellaneous	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	22,507.56	20	\$400,000.00	10%	15%	\$0.11	119	189	AEG research & analysis
Miscellaneous	Interior Lighting	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	3,808.96	3	\$96,000.00	10%	75%	\$0.56	260	413	6th Plan
Miscellaneous	Interior Lighting	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	4,074.28	15	\$31,750.00	20%	65%	\$0.07	194	307	BEST Simulation
Miscellaneous	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	753.27	15	-\$46.54	100%	at stock turnover	-\$0.02	11	17	EIA 2011
Miscellaneous	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	960.41	15	\$368.68	100%	at stock turnover	\$0.01	1,961	1,841	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Miscellaneous bldg.	New	23,688.35	5	\$68,660.00	5%	15%	\$0.47	84	132	Illinois TRM
Miscellaneous	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Miscellaneous bldg.	New	36,540.53	5	\$4,720.00	15%	50%	\$0.02	458	721	Illinois TRM
Miscellaneous	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Miscellaneous bldg.	New	23,912.64	12	\$40,000.00	4%	25%	\$0.15	517	821	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Miscellaneous bldg.	New	3,668.84	16	\$2,970.00	1%	3%	\$0.06	8	12	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	25,497.62	10	\$12,310.00	22%	45%	\$0.05	284	967	Ameren Missouri TRM
Miscellaneous	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Miscellaneous bldg.	New	0.00	25	\$123,000.00	18%	25%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Lighting - Timerclocks and Timers	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$13,550.00	7%	15%	\$10.00	0	0	DEER
Miscellaneous	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Miscellaneous bldg.	New	3,939.38	5	\$11,000.00	10%	25%	\$0.34	18	33	AEG research & analysis
Miscellaneous	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	249.06	15	\$55.00	100%	at stock turnover	\$0.03	9,908	9,879	EIA 2011
Miscellaneous	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	59.84	15	\$8.21	100%	at stock turnover	\$0.01	0	12	EIA 2011
Miscellaneous	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	0%	0%	\$10.00	0	0	BEST Simulation
Miscellaneous	Interior Lighting	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	250.17	6	\$8.31	100%	at stock turnover	\$0.01	0	26	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	203.61	15	\$151.30	100%	at stock turnover	\$0.04	3,807	3,990	EIA 2011
Miscellaneous	Interior Lighting	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	900.30	7	\$9,320.00	1%	8%	\$0.17	9	9	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	Existing	13.12	7	\$200.00	1%	3%	\$2.91	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	Existing	641.01	10	\$1,300.00	1%	3%	\$0.30	2	2	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	Existing	2,686.68	15	\$13,950.00	15%	75%	\$0.62	109	109	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	Existing	1,568.74	10	\$10.04	1%	at stock turnover	\$0.00	1	1	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	Existing	562.95	10	\$30.58	4%	at stock turnover	\$0.01	2	2	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	Existing	21.91	5	\$400.00	15%	75%	\$3.78	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	2,459.94	3	\$31,750.00	5%	16%	\$0.21	59	56	BEST Simulation
Miscellaneous	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	1,038.80	7	\$9,320.00	1%	4%	\$0.17	2	2	Developed from RTF
Miscellaneous	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Miscellaneous bldg.	New	15.21	7	\$10.00	1%	3%	\$0.13	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Miscellaneous	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Miscellaneous	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Miscellaneous bldg.	New	0.00	13	\$0.00	72%	at stock turnover	\$10.00	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Miscellaneous bldg.	New	2,697.06	15	\$13,950.00	15%	75%	\$0.62	63	63	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Miscellaneous bldg.	New	1,568.74	10	\$11.59	1%	at stock turnover	\$0.00	1	1	AEG research & analysis
Miscellaneous	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 100,000 sqft Miscellaneous bldg.	New	562.95	10	\$35.33	5%	at stock turnover	\$0.01	1	1	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Miscellaneous bldg.	New	21.19	5	\$400.00	15%	75%	\$3.81	0	0	AEG research & analysis
Miscellaneous	Miscellaneous	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	8,845.11	6	\$66.37	100%	at stock turnover	\$0.00	342	362	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	Existing	653.96	4	\$2,650.00	10%	50%	\$1.11	170	188	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,741.40	6	\$43.16	100%	at stock turnover	\$0.01	67	71	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,538.49	6	\$104.02	100%	at stock turnover	\$0.01	24	25	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	1,940.54	5	\$4,000.00	10%	25%	\$0.48	192	209	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,799.05	6	\$3.78	28%	at stock turnover	\$0.00	38	40	Assumed same as Desktop
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	1,921.06	6	\$24.56	100%	at stock turnover	\$0.00	17	18	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	Existing	6,454.72	6	\$31.97	66%	at stock turnover	\$0.00	522	535	Assumed same as Desktop
Miscellaneous	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$70,000.00	0%	0%	\$10.00	0	0	E3T Website
Miscellaneous	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	8,845.11	6	\$66.37	100%	at stock turnover	\$0.00	219	220	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Miscellaneous bldg.	New	729.64	4	\$2,650.00	10%	50%	\$0.98	92	98	Developed from RTF
Miscellaneous	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,741.40	6	\$43.16	100%	at stock turnover	\$0.01	43	43	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,538.49	6	\$104.02	100%	at stock turnover	\$0.01	15	15	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	2,184.33	5	\$4,000.00	10%	25%	\$0.42	104	110	5th Plan
Miscellaneous	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,799.05	6	\$4.54	34%	at stock turnover	\$0.00	27	27	Assumed same as Desktop
Miscellaneous	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	1,921.06	6	\$24.56	100%	at stock turnover	\$0.00	9	9	ENERGY STAR Calculator
Miscellaneous	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Miscellaneous bldg.	New	6,454.72	6	\$39.96	83%	at stock turnover	\$0.00	322	320	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$17,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	Existing	4,180.36	9	\$101.55	22%	at stock turnover	\$0.00	102	92	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	Existing	8,213.33	9	\$710.00	0%	10%	\$0.01	15	15	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$40,650.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$35,910.00	0%	0%	\$10.00	0	0	AEO 2013
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	4	\$10,700.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	Existing	19,285.54	10	\$1,207.38	22%	at stock turnover	\$0.02	338	298	EIA 2011
Miscellaneous	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$10,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$1,310.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$16,880.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Miscellaneous bldg.	New	4,180.36	9	\$142.17	30%	at stock turnover	\$0.01	90	82	EIA 2011
Miscellaneous	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	8	\$16,950.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Miscellaneous bldg.	New	8,213.33	9	\$710.00	0%	10%	\$0.01	10	10	PacifiCorp Program Data
Miscellaneous	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$15,380.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Miscellaneous bldg.	New	0.00	16	\$1,080.00	0%	0%	\$10.00	0	0	DEER
Miscellaneous	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$40,650.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$35,910.00	0%	0%	\$10.00	0	0	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Miscellaneous bldg.	New	0.00	4	\$10,700.00	0%	0%	\$10.00	0	0	Developed from RTF
Miscellaneous	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Miscellaneous bldg.	New	19,285.54	10	\$1,690.33	30%	at stock turnover	\$0.03	362	335	EIA 2011
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	Existing	4,544.28	15	\$31,750.00	20%	65%	\$0.06	197	232	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	Existing	865.94	18	\$180.00	15%	50%	\$0.37	17	24	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	Existing	5,168.91	50	\$250,000.00	15%	25%	\$1.04	47	66	6th Plan
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	Existing	5,190.27	45	\$126,270.00	15%	35%	\$0.07	99	118	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	Existing	-115.31	20	\$820.00	15%	50%	\$0.08	-4	-5	BEST Simulation
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	Existing	2,865.21	20	\$35,000.00	15%	50%	\$0.09	95	114	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	Existing	847.19	45	\$77,100.00	15%	35%	\$0.07	16	19	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	Existing	5,254.02	3	\$61,000.00	10%	75%	\$0.32	318	387	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	Existing	3,806.12	3	\$31,750.00	5%	16%	\$0.21	39	57	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	5	\$1,110.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	Existing	1,364.62	15	\$22,000.00	15%	25%	\$1.75	12	15	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	Existing	13,011.33	18	\$17,000.00	15%	35%	\$0.13	245	295	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	Existing	44,553.22	20	\$42,747.00	100%	at stock turnover	\$0.10	504	510	BEST Simulation
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	Existing	37,086.15	15	\$7,100.00	13%	25%	\$0.02	425	490	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$82,440.00	48%	48%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	16,770.90	20	\$400,000.00	10%	15%	\$0.11	45	46	AEG research & analysis
Miscellaneous	Ventilation	Commissioning	per 100,000 sqft Miscellaneous bldg.	New	3,498.80	3	\$96,000.00	10%	75%	\$0.56	122	123	6th Plan
Miscellaneous	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Miscellaneous bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Energy Management System	per 100,000 sqft Miscellaneous bldg.	New	3,058.28	15	\$31,750.00	20%	65%	\$0.07	74	75	BEST Simulation
Miscellaneous	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Miscellaneous bldg.	New	596.68	18	\$170.00	15%	50%	\$0.00	11	11	BEST Simulation
Miscellaneous	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Miscellaneous bldg.	New	0.00	15	\$1,730.00	15%	75%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Miscellaneous bldg.	New	3,413.42	50	\$250,000.00	15%	25%	\$1.32	18	18	6th Plan
Miscellaneous	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Miscellaneous bldg.	New	25.57	45	\$126,270.00	15%	50%	\$0.09	0	0	BEST Simulation
Miscellaneous	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Miscellaneous bldg.	New	648.14	20	\$820.00	15%	50%	\$0.01	12	12	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Miscellaneous bldg.	New	1,929.98	20	\$35,000.00	15%	50%	\$0.10	36	37	BEST Simulation
Miscellaneous	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Miscellaneous bldg.	New	117.26	45	\$77,100.00	15%	50%	\$0.58	2	2	BEST Simulation
Miscellaneous	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	0%	5%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Ventilation	Retrocommissioning	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Miscellaneous	Ventilation	Strategic Energy Management	per 100,000 sqft Miscellaneous bldg.	New	0.00	3	\$31,750.00	16%	16%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Miscellaneous bldg.	New	0.00	5	\$2,990.00	10%	10%	\$10.00	0	0	BEST Simulation
Miscellaneous	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Miscellaneous bldg.	New	901.23	15	\$13,000.00	15%	25%	\$1.53	5	5	6th Plan
Miscellaneous	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Miscellaneous bldg.	New	8,669.48	18	\$17,000.00	15%	35%	\$0.20	93	94	DEER
Miscellaneous	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Miscellaneous bldg.	New	41,984.66	20	\$39,927.33	100%	at stock turnover	\$0.10	198	202	BEST Simulation
Miscellaneous	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Miscellaneous bldg.	New	24,805.22	15	\$7,100.00	19%	25%	\$0.03	74	75	BEST Simulation
Miscellaneous	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Miscellaneous bldg.	New	0.00	20	\$82,440.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	14,755.67	5	\$18,000.00	3%	75%	\$0.22	377	613	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	Existing	7,287.95	7	\$9,320.00	1%	8%	\$0.17	18	28	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	Existing	89,025.62	20	\$7,450.00	0%	1%	\$0.01	31	47	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	15,747.25	5	\$4,000.00	1%	10%	\$0.05	53	82	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	Existing	40,693.30	5	\$2,210.00	25%	65%	\$0.01	223	940	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	Existing	5,258.97	15	\$1,030.00	15%	25%	\$0.02	19	30	Hawaii TRM
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	Existing	404.61	15	\$30.00	15%	75%	\$0.01	9	14	DEER
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	Existing	9,842.84	15	\$11,410.00	16%	75%	\$0.11	211	329	BEST Simulation
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	Existing	34,020.05	20	\$83,330.00	1%	30%	\$0.20	354	561	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	Existing	137,295.07	14	\$21,599.25	44%	at stock turnover	\$0.02	4,753	4,584	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	Existing	14,161.50	5	\$18,000.00	3%	75%	\$0.22	356	595	AEG study for PN&L
Miscellaneous	Water Heating	Advanced New Construction Designs	per 100,000 sqft Miscellaneous bldg.	New	44,101.96	20	\$400,000.00	10%	15%	\$0.11	37	53	AEG research & analysis
Miscellaneous	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	13,042.14	5	\$18,000.00	6%	75%	\$0.22	151	218	AEG study for PN&L
Miscellaneous	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Miscellaneous bldg.	New	6,709.37	7	\$9,320.00	1%	4%	\$0.17	3	4	Developed from RTF
Miscellaneous	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Miscellaneous bldg.	New	84,647.15	20	\$7,450.00	0%	1%	\$0.01	19	27	Developed from RTF (Residential)
Miscellaneous	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	15,167.78	5	\$4,000.00	0%	75%	\$0.05	192	277	AEG study for LA Dept of Water & Power
Miscellaneous	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Miscellaneous bldg.	New	38,688.87	5	\$2,210.00	25%	65%	\$0.01	98	378	DEER
Miscellaneous	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Miscellaneous bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Miscellaneous	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Miscellaneous bldg.	New	5,065.18	15	\$1,030.00	15%	25%	\$0.02	9	12	Hawaii TRM
Miscellaneous	Water Heating	Water Heater - Install Timer	per 100,000 sqft Miscellaneous bldg.	New	387.88	15	\$30.00	15%	75%	\$0.01	4	6	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Miscellaneous	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Miscellaneous bldg.	New	9,152.68	15	\$11,410.00	1%	75%	\$0.11	114	164	BEST Simulation
Miscellaneous	Water Heating	Water Heater - Solar System	per 100,000 sqft Miscellaneous bldg.	New	31,213.33	20	\$83,330.00	1%	30%	\$0.20	152	219	BEST Simulation
Miscellaneous	Water Heating	Water Heating - EF 2.35	per 100,000 sqft Miscellaneous bldg.	New	137,295.07	14	\$21,599.25	44%	at stock turnover	\$0.02	3,408	3,303	BEST Simulation
Miscellaneous	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Miscellaneous bldg.	New	13,552.96	5	\$18,000.00	6%	75%	\$0.22	157	227	AEG study for PN&L
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	8,081.76	23	\$5,516.59	4%	at stock turnover	\$0.19	30	26	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	Existing	4,013.49	23	\$1,039.40	0%	at stock turnover	\$0.03	2	2	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	3,228.12	10	\$814.55	15%	75%	\$0.04	2	2	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	168.86	15	\$530.75	15%	75%	\$0.30	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	Existing	78.36	15	\$908.60	15%	75%	\$1.09	0	0	BEST Simulation
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	Destratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	Existing	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	607.98	10	\$825.00	15%	35%	\$0.07	36	40	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	5,898.77	15	\$3,571.70	15%	75%	\$0.02	29	66	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	1,023.23	15	\$1,746.25	20%	65%	\$0.05	138	151	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	Existing	1,977.46	15	\$17,271.37	10%	at stock turnover	\$1.07	50	47	PacifiCorp Program Data
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	7,128.14	23	\$4,539.84	1%	at stock turnover	\$0.16	12	12	BEST Simulation
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	0.00	18	\$24.20	15%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	Existing	4,199.96	10	\$7,464.05	18%	75%	\$0.24	260	661	DEER
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	1,112.61	50	\$13,750.00	15%	25%	\$0.58	31	40	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	-89.06	45	\$6,944.85	15%	35%	\$0.10	-5	-6	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	1,009.08	45	\$3,810.40	15%	35%	\$0.11	60	66	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	648.69	20	\$1,925.00	15%	50%	\$0.07	67	74	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	-675.39	45	\$4,240.50	15%	35%	\$0.07	-40	-44	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	Existing	3,498.31	15	\$2,364.81	5%	at stock turnover	\$0.08	26	24	BEST Simulation
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	1,205.69	3	\$3,355.00	10%	75%	\$0.23	230	256	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	Existing	6,336.04	23	\$5,660.14	74%	at stock turnover	\$0.09	221	223	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$32,820.15	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	Existing	6,289.88	23	\$1,572.65	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$530.75	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$2,439.80	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	4,657.10	20	\$22,000.00	10%	25%	\$0.07	81	82	AEG research & analysis
Restaurant	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	7,887.74	23	\$5,070.84	5%	at stock turnover	\$0.19	21	17	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 5,500 sqft Restaurant bldg.	New	3,958.06	23	\$933.57	0%	at stock turnover	\$0.02	2	2	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	3,002.12	10	\$814.55	15%	75%	\$0.04	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	197.69	15	\$530.75	15%	75%	\$0.25	0	0	BEST Simulation
Restaurant	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$908.60	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Commissioning	per 5,500 sqft Restaurant bldg.	New	895.65	3	\$5,280.00	10%	75%	\$0.40	67	68	6th Plan
Restaurant	Cooling	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Data Center - Air Flow Optimization and Commissioning	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$11,550.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Cooling	De-stratification Fans (HVLS)	per 5,500 sqft Restaurant bldg.	New	0.00	12	\$2,475.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Restaurant	Cooling	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	486.08	10	\$825.00	15%	50%	\$0.07	20	20	AEG research & analysis
Restaurant	Cooling	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	4,756.32	15	\$3,571.70	15%	75%	\$0.02	10	19	Developed from RTF
Restaurant	Cooling	Energy Management System	per 5,500 sqft Restaurant bldg.	New	843.31	15	\$1,746.25	20%	65%	\$0.05	44	45	BEST Simulation
Restaurant	Cooling	Evaporative Cooling - Indirect/Direct	per 5,500 sqft Restaurant bldg.	New	1,977.46	15	\$22,404.13	12%	at stock turnover	\$1.39	31	28	PacifiCorp Program Data
Restaurant	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	6,956.83	23	\$4,173.01	2%	at stock turnover	\$0.14	9	9	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	HVAC - Chilled Water Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	24.15	18	\$23.10	15%	35%	\$0.02	1	1	BEST Simulation
Restaurant	Cooling	HVAC - Economizer	per 5,500 sqft Restaurant bldg.	New	3,364.89	10	\$7,464.05	18%	75%	\$0.30	30	174	DEER
Restaurant	Cooling	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	874.42	50	\$13,750.00	15%	25%	\$0.72	10	10	6th Plan
Restaurant	Cooling	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	-116.17	45	\$6,944.85	15%	50%	\$0.18	-5	-5	BEST Simulation
Restaurant	Cooling	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	230.93	20	\$45.10	15%	50%	\$0.02	9	10	BEST Simulation
Restaurant	Cooling	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	799.36	45	\$3,810.40	15%	50%	\$0.11	32	33	BPA
Restaurant	Cooling	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	515.13	20	\$1,925.00	15%	50%	\$0.08	21	21	BEST Simulation
Restaurant	Cooling	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	-10.48	45	\$4,240.50	15%	50%	\$0.51	0	0	BEST Simulation
Restaurant	Cooling	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	PTAC - EER 12.2	per 5,500 sqft Restaurant bldg.	New	3,075.21	15	\$2,245.16	7%	at stock turnover	\$0.08	12	11	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Cooling	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Cooling	RTU - EER 12.0	per 5,500 sqft Restaurant bldg.	New	6,183.27	23	\$5,202.79	89%	at stock turnover	\$0.09	149	152	BEST Simulation
Restaurant	Cooling	RTU - Evaporative Precooler	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$32,820.15	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 5,500 sqft Restaurant bldg.	New	6,065.85	23	\$1,412.53	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$814.55	15%	75%	\$10.00	0	0	DEER
Restaurant	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$814.55	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$530.75	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$2,439.80	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Cooling	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	190.16	15	\$1,746.25	20%	65%	\$0.05	57	89	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	511.84	5	\$1,257.30	15%	25%	\$0.41	32	67	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	264.12	10	\$979.00	33%	60%	\$0.38	45	94	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	Existing	3,016.02	10	\$1,532.85	15%	30%	\$0.06	298	574	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	897.93	15	-\$28.89	100%	at stock turnover	-\$0.01	6	10	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,144.84	15	\$228.89	100%	at stock turnover	\$0.01	1,711	1,596	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	176.53	15	\$37.16	100%	at stock turnover	\$0.03	534	514	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	40.26	15	\$2.88	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	174.90	3	\$3,355.00	10%	75%	\$0.23	72	118	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	153.71	6	\$2.66	100%	at stock turnover	\$0.00	0	1	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	125.11	15	\$48.42	100%	at stock turnover	\$0.03	259	295	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Exterior Lighting	Advanced New Construction Designs	per 5,500 sqft	New	841.60	20	\$22,000.00	10%	25%	\$0.07	26	40	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
			Restaurant bldg.										
Restaurant	Exterior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	144.74	3	\$5,280.00	10%	75%	\$0.40	20	30	6th Plan
Restaurant	Exterior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	164.27	15	\$1,746.25	20%	65%	\$0.05	15	23	BEST Simulation
Restaurant	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	425.77	5	\$1,257.30	15%	25%	\$0.45	9	13	Illinois TRM
Restaurant	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	361.32	10	\$979.00	44%	60%	\$0.26	12	18	AEG research & analysis
Restaurant	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 5,500 sqft Restaurant bldg.	New	2,592.57	10	\$1,532.85	15%	30%	\$0.06	81	123	AEG research & analysis
Restaurant	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	897.93	15	-\$28.89	100%	at stock turnover	-\$0.01	4	8	EIA 2011
Restaurant	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,144.84	15	\$228.89	100%	at stock turnover	\$0.01	736	696	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	176.53	15	\$37.16	100%	at stock turnover	\$0.03	220	214	EIA 2011
Restaurant	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	40.26	15	\$2.88	100%	at stock turnover	\$0.01	0	0	EIA 2011
Restaurant	Exterior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	153.71	6	\$2.66	100%	at stock turnover	\$0.00	0	1	EIA 2011
Restaurant	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	125.11	15	\$48.42	100%	at stock turnover	\$0.02	108	113	EIA 2011
Restaurant	Exterior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	40,837.04	15	\$548.90	53%	at stock turnover	\$0.00	1,767	1,731	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	8,323.94	10	\$197.64	9%	at stock turnover	\$0.00	214	185	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	7,055.81	18	\$2,474.22	53%	at stock turnover	\$0.04	234	233	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	14,986.99	10	\$759.72	15%	at stock turnover	\$0.01	442	383	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Food Preparation	Dishwasher - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	40,837.04	15	\$1,045.32	100%	at stock turnover	\$0.00	1,564	1,501	Illinois TRM
Restaurant	Food Preparation	Fryer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	8,323.94	10	\$376.38	17%	at stock turnover	\$0.01	160	146	Developed from RTF "ComCookingConvectionFryer" v2.0
Restaurant	Food Preparation	Hot Food Container - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	7,055.81	18	\$4,711.92	100%	at stock turnover	\$0.07	176	174	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Restaurant	Food Preparation	Oven - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	14,986.99	10	\$1,446.82	29%	at stock turnover	\$0.01	332	302	Developed from RTF "ComCookingConvectionOven" v2.0
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	Existing	1,725.49	23	\$17,714.47	4%	at stock turnover	\$0.19	6	5	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	1,235.58	10	\$825.00	15%	35%	\$0.07	19	19	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	16,616.13	15	\$3,571.70	15%	75%	\$0.02	17	35	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	2,080.08	15	\$1,746.25	20%	65%	\$0.05	71	72	BEST Simulation
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	Existing	2,205.66	23	\$14,154.82	1%	at stock turnover	\$0.16	3	3	BEST Simulation
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	0.00	18	\$24.20	15%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	6,177.73	45	\$6,944.85	15%	35%	\$0.10	91	94	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	Existing	1,987.81	45	\$3,810.40	15%	35%	\$0.11	29	30	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	1,581.20	20	\$1,925.00	15%	50%	\$0.07	41	42	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	6,023.91	45	\$4,240.50	15%	35%	\$0.07	90	92	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	2,374.93	3	\$3,355.00	10%	75%	\$0.23	111	118	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	Existing	0.00	14	\$42,952.80	3%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	11,126.21	20	\$22,000.00	10%	25%	\$0.07	39	39	AEG research & analysis
Restaurant	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 5,500 sqft Restaurant bldg.	New	1,925.56	23	\$17,044.11	4%	at stock turnover	\$0.19	4	4	BEST Simulation
Restaurant	Heating	Commissioning	per 5,500 sqft Restaurant bldg.	New	2,221.95	3	\$5,280.00	10%	75%	\$0.40	34	34	6th Plan
Restaurant	Heating	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	1,161.21	10	\$825.00	15%	50%	\$0.07	10	10	AEG research & analysis
Restaurant	Heating	Ductless Mini Split Heat Pump	per 5,500 sqft Restaurant bldg.	New	16,622.53	15	\$3,571.70	15%	75%	\$0.02	5	10	Developed from RTF
Restaurant	Heating	Energy Management System	per 5,500 sqft Restaurant bldg.	New	2,014.80	15	\$1,746.25	20%	65%	\$0.05	21	21	BEST Simulation
Restaurant	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 5,500 sqft Restaurant bldg.	New	2,681.79	23	\$13,011.12	2%	at stock turnover	\$0.14	3	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	-126.31	18	\$23.10	15%	35%	\$0.02	-1	-1	BEST Simulation
Restaurant	Heating	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	3,207.07	45	\$6,944.85	15%	50%	\$0.18	26	26	BEST Simulation
Restaurant	Heating	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	-27.51	20	\$45.10	15%	50%	\$0.02	0	0	BEST Simulation
Restaurant	Heating	Insulation - Foundation - R-10	per 5,500 sqft Restaurant bldg.	New	1,906.68	45	\$3,810.40	15%	50%	\$0.11	16	16	BPA
Restaurant	Heating	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	1,499.82	20	\$1,925.00	15%	50%	\$0.08	12	12	BEST Simulation
Restaurant	Heating	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	643.19	45	\$4,240.50	15%	50%	\$0.51	5	5	BEST Simulation
Restaurant	Heating	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Heating	Space Heating - Heat Recovery Ventilator	per 5,500 sqft Restaurant bldg.	New	0.00	14	\$42,952.80	6%	75%	\$10.00	0	0	DEER
Restaurant	Heating	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Heating	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Heating	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	449.04	15	\$1,746.25	20%	65%	\$0.05	124	210	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	535.92	15	-\$17.25	100%	at stock turnover	-\$0.01	2	3	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	683.29	15	\$136.61	100%	at stock turnover	\$0.01	569	531	EIA 2011
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	Existing	2,270.70	5	\$7,425.55	5%	15%	\$0.52	45	101	Illinois TRM
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	Existing	3,607.18	5	\$551.65	15%	50%	\$0.03	277	531	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	Existing	2,490.65	12	\$2,200.00	3%	25%	\$0.08	318	729	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	Existing	373.84	16	\$347.60	1%	3%	\$0.07	4	12	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	2,671.73	10	\$1,438.80	7%	45%	\$0.06	430	1,359	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	Existing	0.00	25	\$6,765.00	15%	25%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$1,559.25	7%	15%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	Existing	646.90	5	\$605.00	10%	25%	\$0.12	15	48	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	229.69	15	\$48.34	100%	at stock turnover	\$0.03	4,106	3,949	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	52.38	15	\$3.74	100%	at stock turnover	\$0.01	0	2	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	398.78	3	\$3,355.00	10%	75%	\$0.23	149	270	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	226.95	6	\$3.93	100%	at stock turnover	\$0.00	0	8	EIA 2011
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	184.71	15	\$71.49	100%	at stock turnover	\$0.03	2,051	2,342	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	1,992.74	20	\$22,000.00	10%	25%	\$0.07	60	94	AEG research & analysis
Restaurant	Interior Lighting	Commissioning	per 5,500 sqft Restaurant bldg.	New	333.33	3	\$5,280.00	10%	75%	\$0.40	43	68	6th Plan
Restaurant	Interior Lighting	Energy Management System	per 5,500 sqft Restaurant bldg.	New	375.95	15	\$1,746.25	20%	65%	\$0.05	34	54	BEST Simulation
Restaurant	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	535.92	15	-\$17.25	100%	at stock turnover	-\$0.01	1	3	EIA 2011
Restaurant	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	683.29	15	\$136.61	100%	at stock turnover	\$0.01	245	232	EIA 2011
Restaurant	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 5,500 sqft Restaurant bldg.	New	1,933.31	5	\$7,425.55	5%	15%	\$0.57	13	20	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 5,500 sqft Restaurant bldg.	New	3,092.02	5	\$551.65	15%	50%	\$0.03	75	114	Illinois TRM
Restaurant	Interior Lighting	Interior Lighting - Daylighting Controls	per 5,500 sqft Restaurant bldg.	New	2,080.39	12	\$2,200.00	4%	25%	\$0.09	85	134	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - LED Exit Lighting	per 5,500 sqft Restaurant bldg.	New	312.23	16	\$347.60	1%	3%	\$0.08	1	2	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	2,225.24	10	\$1,438.80	22%	45%	\$0.06	47	158	Ameren Missouri TRM
Restaurant	Interior Lighting	Interior Lighting - Skylights	per 5,500 sqft Restaurant bldg.	New	0.00	25	\$6,765.00	18%	25%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$1,559.25	7%	15%	\$10.00	0	0	DEER
Restaurant	Interior Lighting	Interior Screw-in - Task Lighting	per 5,500 sqft Restaurant bldg.	New	478.13	5	\$605.00	10%	25%	\$0.15	4	8	AEG research & analysis
Restaurant	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	229.69	15	\$48.34	100%	at stock turnover	\$0.03	1,694	1,645	EIA 2011
Restaurant	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	52.38	15	\$3.74	100%	at stock turnover	\$0.01	0	1	EIA 2011
Restaurant	Interior Lighting	Lodging - Guest Room Controls	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Interior Lighting	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	226.95	6	\$3.93	100%	at stock turnover	\$0.00	0	6	EIA 2011
Restaurant	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	184.71	15	\$71.49	100%	at stock turnover	\$0.02	855	896	EIA 2011
Restaurant	Interior Lighting	Strategic Energy Management	per 5,500 sqft	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
			Restaurant bldg.										
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	21.59	7	\$1,397.55	1%	4%	\$0.29	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	Existing	0.32	7	\$30.80	1%	3%	\$18.71	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	Existing	15.44	10	\$194.70	1%	3%	\$1.88	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	Existing	0.00	13	\$0.00	20%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	Existing	563.77	15	\$16,305.30	15%	75%	\$3.46	23	23	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	Existing	86.28	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	Existing	15.48	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	21.65	7	\$1,397.55	1%	2%	\$0.29	0	0	Developed from RTF
Restaurant	Miscellaneous	ENERGY STAR Battery Chargers	per 5,500 sqft Restaurant bldg.	New	0.32	7	\$1.65	1%	3%	\$1.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Restaurant	Miscellaneous	ENERGY STAR Water Cooler	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Restaurant	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 5,500 sqft Restaurant bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 5,500 sqft Restaurant bldg.	New	563.77	15	\$16,305.30	15%	75%	\$3.46	8	8	AEG research & analysis
Restaurant	Miscellaneous	Pool Heater - Heat Pump	per 5,500 sqft Restaurant bldg.	New	86.28	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Pool Pump - High Efficiency	per 5,500 sqft Restaurant bldg.	New	15.48	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Restaurant	Miscellaneous	Pool Pump - Timer	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$59.95	15%	75%	\$10.00	0	0	AEG research & analysis
Restaurant	Miscellaneous	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$55,000.00	0%	0%	\$10.00	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	517.38	6	\$3.88	100%	at stock turnover	\$0.00	61	65	ENERGY STAR Calculator
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	Existing	2.29	4	\$145.75	10%	50%	\$17.47	2	2	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	81.49	6	\$2.02	100%	at stock turnover	\$0.01	10	10	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	89.99	6	\$6.08	100%	at stock turnover	\$0.01	4	5	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	6.72	5	\$220.00	10%	25%	\$7.53	2	2	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	210.46	6	\$1.58	100%	at stock turnover	\$0.00	45	48	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	224.74	6	\$2.87	100%	at stock turnover	\$0.00	6	6	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	Existing	755.11	6	\$2.83	50%	at stock turnover	\$0.00	165	168	Assumed same as Desktop
Restaurant	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,500.00	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Data Center - Server Virtualization	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$10,500.05	0%	0%	\$10.00	0	0	E3T Website
Restaurant	Office Equipment	Desktop Computer - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	517.38	6	\$3.88	100%	at stock turnover	\$0.00	24	24	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Office Equipment	Electronics - Smart Power Strips	per 5,500 sqft Restaurant bldg.	New	2.19	4	\$145.75	10%	50%	\$18.26	1	1	Developed from RTF
Restaurant	Office Equipment	Laptop - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	81.49	6	\$2.02	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
Restaurant	Office Equipment	Monitor - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	89.99	6	\$6.08	100%	at stock turnover	\$0.01	2	2	ENERGY STAR Calculator
Restaurant	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	6.43	5	\$220.00	10%	25%	\$7.87	1	1	5th Plan
Restaurant	Office Equipment	POS Terminal - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	210.46	6	\$1.58	100%	at stock turnover	\$0.00	17	18	Assumed same as Desktop
Restaurant	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	224.74	6	\$2.87	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Restaurant	Office Equipment	Server - ENERGY STAR	per 5,500 sqft Restaurant bldg.	New	755.11	6	\$3.12	55%	at stock turnover	\$0.00	56	55	Assumed same as Desktop
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,631.20	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	Existing	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	Existing	1,742.01	9	\$190.63	97%	at stock turnover	\$0.02	150	136	EIA 2011
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	Existing	726.84	8	\$2,542.65	0%	75%	\$0.57	10	10	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	Existing	1,232.00	9	\$106.15	0%	75%	\$0.01	22	22	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	Existing	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	Existing	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	Existing	1,007.52	15	\$7,266.05	0%	75%	\$0.77	701	792	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	Existing	2,192.02	15	\$5,386.70	0%	75%	\$0.28	1,563	1,684	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	Existing	1,982.13	4	\$2,121.90	0%	75%	\$0.29	375	389	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	Existing	4,018.25	10	\$1,133.20	97%	at stock turnover	\$0.08	1,005	883	EIA 2011
Restaurant	Refrigeration	Grocery - Display Case - LED Lighting	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$1,547.15	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Display Case Motion Sensors	per 5,500 sqft Restaurant bldg.	New	0.00	8	\$196.35	0%	0%	\$10.00	0	0	Developed from RTF
Restaurant	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$2,532.20	0%	0%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 5,500 sqft Restaurant bldg.	New	1,742.01	9	\$195.92	100%	at stock turnover	\$0.02	58	53	EIA 2011
Restaurant	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 5,500 sqft Restaurant bldg.	New	731.79	8	\$2,542.65	0%	75%	\$0.57	3	3	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 5,500 sqft Restaurant bldg.	New	1,232.00	9	\$106.15	0%	75%	\$0.01	7	7	PacifiCorp Program Data
Restaurant	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 5,500 sqft Restaurant bldg.	New	0.00	4	\$2,306.15	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Evaporator Fan Controls	per 5,500 sqft Restaurant bldg.	New	0.00	16	\$161.70	0%	75%	\$10.00	0	0	DEER
Restaurant	Refrigeration	Refrigeration - Floating Head Pressure	per 5,500 sqft Restaurant bldg.	New	989.71	15	\$7,266.05	0%	75%	\$0.79	217	223	Developed from RTF
Restaurant	Refrigeration	Refrigeration - High Efficiency Compressor	per 5,500 sqft Restaurant bldg.	New	2,145.44	15	\$5,386.70	0%	75%	\$0.29	473	485	AEO 2013
Restaurant	Refrigeration	Refrigeration - Strip Curtain	per 5,500 sqft Restaurant bldg.	New	1,988.93	4	\$2,121.90	0%	75%	\$0.29	116	116	Developed from RTF
Restaurant	Refrigeration	Vending Machine - 1,820 kWh/yr	per 5,500 sqft Restaurant bldg.	New	4,018.25	10	\$1,164.65	100%	at stock turnover	\$0.08	419	388	EIA 2011
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$5,280.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	Existing	0.00	10	\$825.00	15%	35%	\$0.00	0	0	AEG research & analysis
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	Existing	575.16	15	\$1,746.25	20%	65%	\$0.05	78	90	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	Existing	0.00	18	\$24.20	15%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$260.15	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	Existing	660.49	50	\$13,750.00	15%	25%	\$0.58	19	25	6th Plan
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	Existing	0.00	45	\$6,944.85	15%	35%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$45.10	15%	35%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	Existing	359.82	20	\$1,925.00	15%	50%	\$0.07	37	44	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	Existing	105.88	45	\$4,240.50	15%	35%	\$0.07	6	7	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	Existing	671.48	3	\$3,355.00	10%	75%	\$0.23	127	152	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	Existing	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	Existing	0.00	5	\$167.20	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	Existing	174.37	15	\$1,210.00	15%	25%	\$0.74	5	6	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	Existing	1,663.46	18	\$935.00	15%	35%	\$0.06	99	116	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	Existing	3,654.68	20	\$6,204.36	100%	at stock turnover	\$0.18	173	175	BEST Simulation
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	Existing	4,187.23	15	\$1,640.10	13%	50%	\$0.05	487	533	BEST Simulation
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$16,341.60	48%	48%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	2,546.59	20	\$22,000.00	10%	25%	\$0.07	39	39	AEG research & analysis
Restaurant	Ventilation	Commissioning	per 5,500 sqft Restaurant bldg.	New	518.51	3	\$5,280.00	10%	75%	\$0.40	34	34	6th Plan
Restaurant	Ventilation	Cool Roofs - Absorbptivity 0.2	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$4,290.00	45%	50%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Doors - High Efficiency - R-5	per 5,500 sqft Restaurant bldg.	New	0.00	10	\$825.00	15%	50%	\$0.00	0	0	AEG research & analysis
Restaurant	Ventilation	Energy Management System	per 5,500 sqft Restaurant bldg.	New	490.15	15	\$1,746.25	20%	65%	\$0.05	22	23	BEST Simulation
Restaurant	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 5,500 sqft Restaurant bldg.	New	250.23	18	\$23.10	15%	35%	\$0.02	5	5	BEST Simulation
Restaurant	Ventilation	HVAC - Occupancy Sensors	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$260.15	15%	75%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 5,500 sqft Restaurant bldg.	New	505.40	50	\$13,750.00	15%	25%	\$0.72	5	5	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Insulation - Ceiling - R-38	per 5,500 sqft Restaurant bldg.	New	0.00	45	\$6,944.85	15%	50%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Ducting - R-8	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$45.10	15%	50%	\$0.00	0	0	BEST Simulation
Restaurant	Ventilation	Insulation - Radiant Barrier - R-5	per 5,500 sqft Restaurant bldg.	New	278.45	20	\$1,925.00	15%	50%	\$0.08	10	10	BEST Simulation
Restaurant	Ventilation	Insulation - Wall Cavity - R-23	per 5,500 sqft Restaurant bldg.	New	17.38	45	\$4,240.50	15%	50%	\$0.51	1	1	BEST Simulation
Restaurant	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Ventilation	Retrocommissioning	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$3,355.00	0%	0%	\$10.00	0	0	6th Plan
Restaurant	Ventilation	Strategic Energy Management	per 5,500 sqft Restaurant bldg.	New	0.00	3	\$1,746.25	0%	0%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Thermostat - Clock/Programmable	per 5,500 sqft Restaurant bldg.	New	0.00	5	\$448.25	10%	10%	\$10.00	0	0	BEST Simulation
Restaurant	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 5,500 sqft Restaurant bldg.	New	134.06	15	\$715.00	15%	25%	\$0.54	1	1	6th Plan
Restaurant	Ventilation	Ventilation - ECM on VAV Boxes	per 5,500 sqft Restaurant bldg.	New	1,293.60	18	\$935.00	15%	35%	\$0.07	26	26	DEER
Restaurant	Ventilation	Ventilation - Variable Air Volume	per 5,500 sqft Restaurant bldg.	New	3,138.88	20	\$5,982.63	100%	at stock turnover	\$0.20	34	34	BEST Simulation
Restaurant	Ventilation	Ventilation - Variable Speed Control	per 5,500 sqft Restaurant bldg.	New	3,037.59	15	\$1,640.10	19%	50%	\$0.06	94	95	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Ventilation	Windows - High Efficiency - U-0.35 Window	per 5,500 sqft Restaurant bldg.	New	0.00	20	\$16,341.60	66%	66%	\$10.00	0	0	BEST Simulation
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	Existing	0.00	20	\$22,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,114.66	5	\$990.00	3%	75%	\$0.07	145	152	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	Existing	740.64	7	\$1,397.55	1%	4%	\$0.29	1	2	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	Existing	18,193.57	20	\$1,117.60	0%	3%	\$0.01	36	36	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	3,429.01	5	\$220.00	1%	10%	\$0.02	21	21	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	Existing	8,222.61	5	\$551.65	25%	65%	\$0.02	81	221	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	Existing	0.00	15	\$283.25	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	Existing	16.43	15	\$1.65	15%	75%	\$0.01	1	1	DEER
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	Existing	2,002.56	15	\$1,036.20	16%	75%	\$0.06	77	80	BEST Simulation
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	Existing	6,346.18	20	\$25,000.25	1%	30%	\$0.34	115	128	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	Existing	694.24	13	\$35.50	19%	at stock turnover	\$0.01	31	30	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	Existing	2,982.91	5	\$990.00	3%	75%	\$0.07	137	148	AEG study for PN&L
Restaurant	Water Heating	Advanced New Construction Designs	per 5,500 sqft Restaurant bldg.	New	9,395.13	20	\$22,000.00	10%	25%	\$0.07	28	29	AEG research & analysis
Restaurant	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	2,829.75	5	\$990.00	6%	75%	\$0.07	39	40	AEG study for PN&L
Restaurant	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 5,500 sqft Restaurant bldg.	New	708.70	7	\$1,397.55	1%	2%	\$0.29	0	0	Developed from RTF
Restaurant	Water Heating	Water Heater - Desuperheater	per 5,500 sqft Restaurant bldg.	New	18,149.57	20	\$1,117.60	0%	4%	\$0.01	13	13	Developed from RTF (Residential)
Restaurant	Water Heating	Water Heater - Drainwater Heat Recovery	per 5,500 sqft Restaurant bldg.	New	3,416.69	5	\$220.00	0%	75%	\$0.02	52	52	AEG study for LA Dept of Water & Power
Restaurant	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 5,500 sqft Restaurant bldg.	New	7,894.94	5	\$551.65	25%	65%	\$0.02	24	65	DEER
Restaurant	Water Heating	Water Heater - Faucet Motion Sensor Control	per 5,500 sqft Restaurant bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Restaurant	Water Heating	Water Heater - High Efficiency Circulation Pump	per 5,500 sqft Restaurant bldg.	New	0.00	15	\$283.25	0%	0%	\$10.00	0	0	Hawaii TRM
Restaurant	Water Heating	Water Heater - Install Timer	per 5,500 sqft Restaurant bldg.	New	16.45	15	\$1.65	15%	75%	\$0.01	0	0	DEER
Restaurant	Water Heating	Water Heater - Pipe Insulation	per 5,500 sqft Restaurant bldg.	New	1,950.09	15	\$1,036.20	1%	75%	\$0.06	29	29	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Restaurant	Water Heating	Water Heater - Solar System	per 5,500 sqft Restaurant bldg.	New	6,046.70	20	\$25,000.25	1%	30%	\$0.34	35	35	BEST Simulation
Restaurant	Water Heating	Water Heating - EF 0.89	per 5,500 sqft Restaurant bldg.	New	694.24	13	\$35.50	20%	at stock turnover	\$0.01	15	14	BEST Simulation
Restaurant	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 5,500 sqft Restaurant bldg.	New	2,942.14	5	\$990.00	6%	75%	\$0.07	41	41	AEG study for PN&L
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	10,078.88	23	\$183,318.64	4%	at stock turnover	\$0.13	32	28	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 30,000 sqft School bldg.	Existing	11,201.51	23	\$22,581.28	46%	at stock turnover	\$0.21	484	488	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	9,175.43	10	\$813.00	15%	75%	\$0.01	657	729	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	2,858.56	15	\$1,086.00	15%	75%	\$0.04	199	233	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	Existing	397.16	15	\$4,845.00	15%	75%	\$1.11	26	34	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	5,267.95	15	\$23,400.00	45%	50%	\$1.18	60	71	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	Existing	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Cooling	De-stratification Fans (HVLS)	per 30,000 sqft School bldg.	Existing	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

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School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	1,155.69	10	\$4,500.00	15%	35%	\$0.11	55	62	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	Existing	1,939.27	15	\$9,525.00	20%	65%	\$0.09	210	235	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	Existing	2,457.33	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	8,877.59	23	\$150,601.34	3%	at stock turnover	\$0.08	8	8	BEST Simulation
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	980.63	18	\$129.00	15%	50%	\$0.02	84	98	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	Existing	7,690.87	10	\$39,801.00	18%	75%	\$0.65	452	1,202	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	2,067.43	50	\$75,000.00	15%	25%	\$1.65	47	62	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	-623.10	45	\$37,881.00	15%	35%	\$0.27	-29	-34	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	2,335.82	20	\$246.00	15%	35%	\$0.01	114	126	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	1,912.12	45	\$20,784.00	15%	35%	\$0.17	91	103	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	1,229.60	20	\$10,500.00	15%	50%	\$0.13	103	116	BEST Simulation
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	-1,283.53	45	\$23,130.00	15%	35%	\$0.09	-61	-69	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	Existing	4,346.30	15	\$31,886.80	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	Existing	2,272.14	3	\$18,300.00	10%	75%	\$0.44	349	398	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	Existing	3,308.13	23	\$36,170.96	33%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	Existing	0.00	15	\$175,020.00	15%	75%	\$10.00	0	0	DEER
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	1,651.16	3	\$9,525.00	2%	22%	\$0.28	78	104	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	Existing	22,672.86	23	\$34,166.46	11%	at stock turnover	\$0.15	30	30	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	Existing	5,976.63	10	\$813.00	15%	75%	\$0.02	98	121	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	Existing	9,509.15	4	\$813.00	15%	75%	\$0.02	153	194	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	Existing	4,260.66	15	\$1,086.00	15%	75%	\$0.03	67	89	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	Existing	451.12	15	\$4,986.00	15%	75%	\$0.95	7	10	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Cooling	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	6,884.77	20	\$120,000.00	10%	25%	\$0.16	44	44	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	9,296.14	23	\$181,822.55	5%	at stock turnover	\$0.14	9	8	BEST Simulation
School	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per 30,000 sqft School bldg.	New	815.70	23	\$9,506.97	52%	at stock turnover	\$1.21	9	9	BEST Simulation
School	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	5,981.13	10	\$813.00	15%	75%	\$0.02	72	72	BEST Simulation
School	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	2,847.96	15	\$1,086.00	15%	75%	\$0.04	34	34	BEST Simulation
School	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 30,000 sqft School bldg.	New	265.74	15	\$4,845.00	15%	75%	\$1.64	3	3	BEST Simulation
School	Cooling	Commissioning	per 30,000 sqft School bldg.	New	1,423.95	3	\$28,800.00	10%	75%	\$0.78	39	40	6th Plan
School	Cooling	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	1,190.11	15	\$23,400.00	45%	50%	\$8.03	3	3	BEST Simulation
School	Cooling	Data Center - Air Flow Optimization and Commissioning	per 30,000 sqft School bldg.	New	0.00	15	\$63,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Cooling	Destratification Fans (HVLS)	per 30,000 sqft School bldg.	New	0.00	12	\$13,500.00	15%	0%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
School	Cooling	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	747.57	10	\$4,500.00	15%	50%	\$0.12	11	11	AEG research & analysis
School	Cooling	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	0.00	15	\$3,573.00	15%	25%	\$0.00	0	0	Developed from RTF
School	Cooling	Energy Management System	per 30,000 sqft School bldg.	New	1,263.42	15	\$9,525.00	20%	65%	\$0.10	24	24	BEST Simulation
School	Cooling	Evaporative Cooling - Indirect/Direct	per 30,000 sqft School bldg.	New	2,457.33	15	\$0.00	0%	at stock turnover	\$0.00	0	0	PacifiCorp Program Data
School	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	8,179.86	23	\$149,372.25	3%	at stock turnover	\$0.09	7	7	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	HVAC - Chilled Water Pipe Insulation	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	611.31	18	\$129.00	15%	35%	\$0.08	5	5	BEST Simulation
School	Cooling	HVAC - Economizer	per 30,000 sqft School bldg.	New	4,760.06	10	\$39,801.00	18%	75%	\$1.04	19	107	DEER
School	Cooling	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Cooling	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	1,294.87	50	\$75,000.00	15%	25%	\$2.65	5	6	6th Plan
School	Cooling	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	-910.90	45	\$37,881.00	15%	50%	\$0.51	-14	-14	BEST Simulation
School	Cooling	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	1,479.28	20	\$246.00	15%	50%	\$0.03	22	22	BEST Simulation
School	Cooling	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	1,197.76	45	\$20,784.00	15%	50%	\$0.20	18	18	BPA
School	Cooling	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	792.27	20	\$10,500.00	15%	50%	\$0.14	12	12	BEST Simulation
School	Cooling	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	-17.06	45	\$23,130.00	15%	50%	\$0.72	0	0	BEST Simulation
School	Cooling	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Cooling	PTAC - EER 12.2	per 30,000 sqft School bldg.	New	3,893.13	15	\$31,844.85	0%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Cooling	RTU - EER 10.1	per 30,000 sqft School bldg.	New	3,044.47	23	\$35,875.77	40%	at stock turnover	\$0.00	0	0	BEST Simulation
School	Cooling	RTU - Evaporative Precooler	per 30,000 sqft School bldg.	New	0.00	15	\$175,020.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Cooling	Strategic Energy Management	per 30,000 sqft School bldg.	New	1,026.15	3	\$9,525.00	2%	22%	\$0.33	11	11	BEST Simulation
School	Cooling	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 30,000 sqft School bldg.	New	16,037.02	23	\$28,768.91	13%	at stock turnover	\$0.18	6	6	BEST Simulation
School	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 30,000 sqft School bldg.	New	3,086.24	10	\$813.00	15%	75%	\$0.04	9	9	DEER
School	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 30,000 sqft School bldg.	New	4,843.32	4	\$813.00	15%	75%	\$0.04	14	14	BEST Simulation
School	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
School	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 30,000 sqft School bldg.	New	3,732.43	15	\$1,086.00	15%	75%	\$0.03	11	11	BEST Simulation
School	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 30,000 sqft School bldg.	New	257.95	15	\$4,986.00	15%	75%	\$1.67	1	1	BEST Simulation
School	Cooling	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	346.85	15	\$9,525.00	20%	65%	\$0.08	86	131	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	919.43	5	\$13,092.00	15%	25%	\$2.46	47	95	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	727.57	10	\$3,381.00	33%	60%	\$0.50	103	206	AEG research & analysis
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	Existing	5,500.43	10	\$5,292.00	15%	30%	\$0.11	448	830	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	335.47	15	-\$23.55	100%	at stock turnover	-\$0.03	2	4	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	427.72	15	\$186.58	100%	at stock turnover	\$0.01	588	552	EIA 2011
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	102.85	15	\$25.81	100%	at stock turnover	\$0.03	2,991	3,074	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	24.71	15	\$3.85	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	316.41	3	\$18,300.00	10%	75%	\$0.43	108	173	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	100.55	6	\$3.80	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	81.83	15	\$69.10	100%	at stock turnover	\$0.06	13	15	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	275.90	3	\$9,525.00	2%	22%	\$0.28	29	63	BEST Simulation
School	Exterior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	1,632.15	20	\$120,000.00	10%	25%	\$0.16	18	30	AEG research & analysis
School	Exterior Lighting	Commissioning	per 30,000 sqft School bldg.	New	278.44	3	\$28,800.00	10%	75%	\$0.78	14	22	6th Plan
School	Exterior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	318.77	15	\$9,525.00	20%	65%	\$0.10	11	17	BEST Simulation
School	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 30,000 sqft School bldg.	New	818.95	5	\$13,092.00	15%	25%	\$2.63	6	10	Illinois TRM
School	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	749.55	10	\$3,381.00	44%	60%	\$0.47	9	15	AEG research & analysis
School	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 30,000 sqft School bldg.	New	5,030.44	10	\$5,292.00	15%	30%	\$0.12	57	92	AEG research & analysis
School	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	335.47	15	-\$23.55	100%	at stock turnover	-\$0.03	1	1	EIA 2011
School	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	427.72	15	\$186.58	100%	at stock turnover	\$0.01	112	106	EIA 2011
School	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	102.85	15	\$25.81	100%	at stock turnover	\$0.03	567	591	EIA 2011
School	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	24.71	15	\$3.85	100%	at stock turnover	\$0.00	0	0	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Exterior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	100.55	6	\$3.80	100%	at stock turnover	\$0.01	0	0	EIA 2011
School	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	81.83	15	\$69.10	100%	at stock turnover	\$0.05	2	3	EIA 2011
School	Exterior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	245.99	3	\$9,525.00	2%	22%	\$0.33	5	8	BEST Simulation
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	Existing	7,435.18	15	\$99.58	52%	at stock turnover	\$0.00	260	254	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	757.77	10	\$118.46	59%	at stock turnover	\$0.02	103	90	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	Existing	1,284.65	18	\$448.88	52%	at stock turnover	\$0.04	34	34	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	Existing	1,364.34	10	\$294.85	65%	at stock turnover	\$0.03	139	120	Developed from RTF "ComCookingConvectionOven" v2.0
School	Food Preparation	Dishwasher - ENERGY STAR	per 30,000 sqft School bldg.	New	7,435.18	15	\$139.42	73%	at stock turnover	\$0.00	77	74	Illinois TRM
School	Food Preparation	Fryer - ENERGY STAR	per 30,000 sqft School bldg.	New	757.77	10	\$165.85	82%	at stock turnover	\$0.03	26	24	Developed from RTF "ComCookingConvectionFryer" v2.0
School	Food Preparation	Hot Food Container - ENERGY STAR	per 30,000 sqft School bldg.	New	1,284.65	18	\$628.43	73%	at stock turnover	\$0.05	9	9	Developed from RTF "ComCookingHotFoodCabinet" v2.0
School	Food Preparation	Oven - ENERGY STAR	per 30,000 sqft School bldg.	New	1,364.34	10	\$412.78	91%	at stock turnover	\$0.05	35	32	Developed from RTF "ComCookingConvectionOven" v2.0
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	Existing	9,253.33	23	\$23,920.41	4%	at stock turnover	\$0.13	27	23	BEST Simulation
School	Heating	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	-3,837.37	15	\$23,400.00	45%	50%	\$1.19	-10	-11	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	4,855.18	10	\$4,500.00	15%	35%	\$0.11	54	56	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	Existing	73,502.99	15	\$3,573.00	15%	25%	\$0.01	295	295	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	Existing	8,280.08	15	\$9,525.00	20%	65%	\$0.09	211	216	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	Existing	16,847.66	23	\$20,697.64	3%	at stock turnover	\$0.08	14	14	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	-803.89	18	\$129.00	15%	50%	\$0.02	-16	-17	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	12,202.84	45	\$37,881.00	15%	35%	\$0.27	134	142	BEST Simulation
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	-728.69	20	\$246.00	15%	35%	\$0.01	-8	-8	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	Existing	8,022.43	45	\$20,784.00	15%	35%	\$0.17	88	93	BPA
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	6,295.14	20	\$10,500.00	15%	50%	\$0.13	122	128	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	24,044.37	45	\$23,130.00	15%	35%	\$0.09	270	279	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	Existing	9,454.58	3	\$18,300.00	10%	75%	\$0.44	334	357	6th Plan
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	Existing	0.00	14	\$100,251.00	3%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	6,870.91	3	\$9,525.00	2%	22%	\$0.28	75	85	BEST Simulation

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School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	42,545.35	20	\$120,000.00	10%	25%	\$0.16	53	53	AEG research & analysis
School	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 30,000 sqft School bldg.	New	8,961.74	23	\$24,463.06	5%	at stock turnover	\$0.14	8	6	BEST Simulation
School	Heating	Commissioning	per 30,000 sqft School bldg.	New	8,601.62	3	\$28,800.00	10%	75%	\$0.78	46	47	6th Plan
School	Heating	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	-1,047.90	15	\$23,400.00	45%	50%	\$8.03	0	0	BEST Simulation
School	Heating	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	4,627.04	10	\$4,500.00	15%	50%	\$0.12	14	14	AEG research & analysis
School	Heating	Ductless Mini Split Heat Pump	per 30,000 sqft School bldg.	New	73,502.99	15	\$3,573.00	15%	25%	\$0.01	40	40	Developed from RTF
School	Heating	Energy Management System	per 30,000 sqft School bldg.	New	7,820.26	15	\$9,525.00	20%	65%	\$0.10	29	30	BEST Simulation
School	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 30,000 sqft School bldg.	New	15,495.10	23	\$20,528.74	3%	at stock turnover	\$0.09	13	13	BEST Simulation
School	Heating	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	-811.44	18	\$129.00	15%	35%	\$0.08	-1	-1	BEST Simulation
School	Heating	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Heating	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	6,943.66	45	\$37,881.00	15%	50%	\$0.51	20	20	BEST Simulation
School	Heating	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	-739.16	20	\$246.00	15%	50%	\$0.03	-2	-2	BEST Simulation
School	Heating	Insulation - Foundation - R-10	per 30,000 sqft School bldg.	New	7,400.88	45	\$20,784.00	15%	50%	\$0.20	22	22	BPA

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Heating	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	5,976.22	20	\$10,500.00	15%	50%	\$0.14	17	18	BEST Simulation
School	Heating	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	2,560.83	45	\$23,130.00	15%	50%	\$0.72	7	7	BEST Simulation
School	Heating	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Heating	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Heating	Space Heating - Heat Recovery Ventilator	per 30,000 sqft School bldg.	New	0.00	14	\$100,251.00	6%	75%	\$10.00	0	0	DEER
School	Heating	Strategic Energy Management	per 30,000 sqft School bldg.	New	6,340.19	3	\$9,525.00	2%	22%	\$0.33	14	14	BEST Simulation
School	Heating	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Heating	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	Existing	1,014.90	15	\$9,525.00	20%	65%	\$0.08	234	384	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	851.06	15	-\$59.75	100%	at stock turnover	-\$0.03	5	9	EIA 2011
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,085.09	15	\$473.34	100%	at stock turnover	\$0.01	1,498	1,405	EIA 2011
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	Existing	6,995.63	5	\$14,850.00	5%	15%	\$0.35	117	245	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	Existing	11,076.21	5	\$705.00	15%	50%	\$0.01	703	1,298	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	Existing	6,037.60	12	\$12,000.00	3%	25%	\$0.19	664	1,377	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	Existing	914.01	16	\$444.00	1%	3%	\$0.04	9	21	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	6,547.24	10	\$1,836.00	7%	45%	\$0.03	915	2,582	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	Existing	0.00	25	\$36,900.00	15%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 30,000 sqft School bldg.	Existing	0.00	8	\$2,025.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	Existing	387.39	5	\$3,300.00	10%	25%	\$1.06	6	25	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	286.81	15	\$71.98	100%	at stock turnover	\$0.03	9,461	9,725	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	68.91	15	\$10.74	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	Existing	954.11	3	\$18,300.00	10%	75%	\$0.43	307	522	6th Plan
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	343.73	6	\$12.98	100%	at stock turnover	\$0.01	0	3	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	279.76	15	\$236.23	100%	at stock turnover	\$0.06	837	956	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	837.91	3	\$9,525.00	2%	22%	\$0.28	83	210	BEST Simulation
School	Interior Lighting	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	5,213.49	20	\$120,000.00	10%	25%	\$0.16	58	94	AEG research & analysis
School	Interior Lighting	Commissioning	per 30,000 sqft School bldg.	New	861.29	3	\$28,800.00	10%	75%	\$0.78	42	67	6th Plan
School	Interior Lighting	Energy Management System	per 30,000 sqft School bldg.	New	943.82	15	\$9,525.00	20%	65%	\$0.10	32	51	BEST Simulation
School	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	851.06	15	-\$59.75	100%	at stock turnover	-\$0.03	2	3	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,085.09	15	\$473.34	100%	at stock turnover	\$0.01	286	269	EIA 2011
School	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 30,000 sqft School bldg.	New	6,436.25	5	\$14,850.00	5%	15%	\$0.38	16	26	Illinois TRM
School	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 30,000 sqft School bldg.	New	10,174.19	5	\$705.00	15%	50%	\$0.01	89	145	Illinois TRM
School	Interior Lighting	Interior Lighting - Daylighting Controls	per 30,000 sqft School bldg.	New	5,444.18	12	\$12,000.00	4%	25%	\$0.21	83	135	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - LED Exit Lighting	per 30,000 sqft School bldg.	New	849.90	16	\$444.00	1%	3%	\$0.04	1	2	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Occupancy Sensors	per 30,000 sqft School bldg.	New	5,908.14	10	\$1,836.00	22%	45%	\$0.03	47	161	Ameren Missouri TRM
School	Interior Lighting	Interior Lighting - Skylights	per 30,000 sqft School bldg.	New	0.00	25	\$36,900.00	18%	50%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 30,000 sqft School bldg.	New	0.00	8	\$2,025.00	7%	15%	\$10.00	0	0	DEER
School	Interior Lighting	Interior Screw-in - Task Lighting	per 30,000 sqft School bldg.	New	237.11	5	\$3,300.00	10%	25%	\$1.63	1	1	AEG research & analysis
School	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	286.81	15	\$71.98	100%	at stock turnover	\$0.03	1,793	1,871	EIA 2011
School	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	68.91	15	\$10.74	100%	at stock turnover	\$0.00	0	0	EIA 2011
School	Interior Lighting	Lodging - Guest Room Controls	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	0%	0%	\$10.00	0	0	BEST Simulation
School	Interior Lighting	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	343.73	6	\$12.98	100%	at stock turnover	\$0.01	0	1	EIA 2011
School	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	279.76	15	\$236.23	100%	at stock turnover	\$0.05	163	171	EIA 2011
School	Interior Lighting	Strategic Energy Management	per 30,000 sqft School bldg.	New	756.64	3	\$9,525.00	2%	22%	\$0.33	15	24	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	315.64	7	\$1,398.00	1%	4%	\$0.25	3	3	Developed from RTF
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	Existing	4.59	7	\$30.00	1%	3%	\$1.25	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	Existing	225.74	10	\$195.00	1%	3%	\$0.13	2	2	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	Existing	0.00	13	\$0.00	44%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	Existing	438.14	15	\$96.00	15%	75%	\$0.03	32	32	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	Existing	573.40	10	\$3.67	1%	at stock turnover	\$0.00	1	1	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	Existing	411.54	10	\$33.54	6%	at stock turnover	\$0.01	5	5	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	Existing	15.97	5	\$60.00	15%	75%	\$0.78	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	564.01	3	\$9,525.00	2%	22%	\$0.28	56	54	BEST Simulation
School	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	315.68	7	\$1,398.00	1%	2%	\$0.25	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Miscellaneous	ENERGY STAR Battery Chargers	per 30,000 sqft School bldg.	New	4.62	7	\$3.00	1%	3%	\$0.12	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
School	Miscellaneous	ENERGY STAR Water Cooler	per 30,000 sqft School bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
School	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 30,000 sqft School bldg.	New	0.00	13	\$0.00	48%	at stock turnover	\$10.00	0	0	AEG research & analysis
School	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 30,000 sqft School bldg.	New	438.14	15	\$96.00	15%	75%	\$0.03	5	5	AEG research & analysis
School	Miscellaneous	Pool Heater - Heat Pump	per 30,000 sqft School bldg.	New	573.40	10	\$4.40	1%	at stock turnover	\$0.00	0	0	AEG research & analysis
School	Miscellaneous	Pool Pump - High Efficiency, Multi-Speed	per 30,000 sqft School bldg.	New	411.54	10	\$40.24	7%	at stock turnover	\$0.01	1	1	Hawaii TRM
School	Miscellaneous	Pool Pump - Timer	per 30,000 sqft School bldg.	New	15.42	5	\$60.00	15%	75%	\$0.78	0	0	AEG research & analysis
School	Miscellaneous	Strategic Energy Management	per 30,000 sqft School bldg.	New	547.67	3	\$9,525.00	2%	22%	\$0.33	10	10	BEST Simulation
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	Existing	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	Existing	2,986.37	6	\$22.41	100%	at stock turnover	\$0.00	286	302	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	Existing	499.34	4	\$795.00	10%	50%	\$0.43	324	377	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	Existing	235.18	6	\$5.83	100%	at stock turnover	\$0.01	23	24	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	Existing	519.44	6	\$35.12	100%	at stock turnover	\$0.01	20	21	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	Existing	1,525.29	5	\$1,200.00	10%	25%	\$0.18	388	433	5th Plan
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	Existing	121.48	6	\$0.33	36%	at stock turnover	\$0.00	8	8	Assumed same as Desktop
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	Existing	648.61	6	\$8.29	100%	at stock turnover	\$0.00	14	15	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	Existing	871.72	6	\$6.54	100%	at stock turnover	\$0.00	218	225	Assumed same as Desktop
School	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 30,000 sqft School bldg.	New	0.00	20	\$90,000.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Data Center - Server Virtualization	per 30,000 sqft School bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
School	Office Equipment	Desktop Computer - ENERGY STAR	per 30,000 sqft School bldg.	New	2,986.37	6	\$22.41	100%	at stock turnover	\$0.00	52	52	ENERGY STAR Calculator
School	Office Equipment	Electronics - Smart Power Strips	per 30,000 sqft School bldg.	New	475.01	4	\$795.00	10%	50%	\$0.44	43	46	Developed from RTF
School	Office Equipment	Laptop - ENERGY STAR	per 30,000 sqft School bldg.	New	235.18	6	\$5.83	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
School	Office Equipment	Monitor - ENERGY STAR	per 30,000 sqft School bldg.	New	519.44	6	\$35.12	100%	at stock turnover	\$0.01	4	4	ENERGY STAR Calculator
School	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 30,000 sqft School bldg.	New	1,479.64	5	\$1,200.00	10%	25%	\$0.19	50	54	5th Plan
School	Office Equipment	POS Terminal - ENERGY STAR	per 30,000 sqft School bldg.	New	121.48	6	\$0.33	36%	at stock turnover	\$0.00	1	1	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 30,000 sqft School bldg.	New	648.61	6	\$8.29	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
School	Office Equipment	Server - ENERGY STAR	per 30,000 sqft School bldg.	New	871.72	6	\$6.54	100%	at stock turnover	\$0.00	35	35	Assumed same as Desktop
School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	Existing	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	Existing	627.11	9	\$46.34	66%	at stock turnover	\$0.01	31	28	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	Existing	1,704.43	8	\$2,544.00	0%	25%	\$0.26	78	79	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	Existing	1,232.00	9	\$105.00	0%	25%	\$0.01	29	29	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	Existing	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	Existing	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	Existing	210.63	15	\$315.00	0%	25%	\$0.17	44	48	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	Existing	413.57	15	\$5,388.00	0%	25%	\$1.44	86	95	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	Existing	368.24	4	\$4,524.00	0%	25%	\$3.49	5	5	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	Existing	1,446.55	10	\$275.46	66%	at stock turnover	\$0.05	205	179	EIA 2011
School	Refrigeration	Grocery - Display Case - LED Lighting	per 30,000 sqft School bldg.	New	0.00	5	\$1,548.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Refrigeration	Grocery - Display Case Motion Sensors	per 30,000 sqft School bldg.	New	0.00	8	\$195.00	0%	0%	\$10.00	0	0	Developed from RTF
School	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 30,000 sqft School bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
School	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 30,000 sqft School bldg.	New	627.11	9	\$64.87	92%	at stock turnover	\$0.02	7	7	EIA 2011
School	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 30,000 sqft School bldg.	New	1,705.50	8	\$2,544.00	0%	25%	\$0.26	15	15	Developed from RTF
School	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 30,000 sqft School bldg.	New	1,232.00	9	\$105.00	0%	25%	\$0.01	5	5	PacifiCorp Program Data
School	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 30,000 sqft School bldg.	New	0.00	4	\$2,307.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Evaporator Fan Controls	per 30,000 sqft School bldg.	New	0.00	16	\$162.00	0%	25%	\$10.00	0	0	DEER
School	Refrigeration	Refrigeration - Floating Head Pressure	per 30,000 sqft School bldg.	New	207.29	15	\$315.00	0%	25%	\$0.17	8	9	Developed from RTF
School	Refrigeration	Refrigeration - High Efficiency Compressor	per 30,000 sqft School bldg.	New	407.52	15	\$5,388.00	0%	25%	\$1.47	17	17	AEO 2013
School	Refrigeration	Refrigeration - Strip Curtain	per 30,000 sqft School bldg.	New	368.73	4	\$4,524.00	0%	25%	\$3.49	1	1	Developed from RTF
School	Refrigeration	Vending Machine - 1,820 kWh/yr	per 30,000 sqft School bldg.	New	1,446.55	10	\$385.64	92%	at stock turnover	\$0.08	58	54	EIA 2011
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	Existing	0.00	3	\$28,800.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	Existing	0.00	15	\$23,400.00	45%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	Existing	0.00	10	\$4,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	Existing	882.26	15	\$9,525.00	20%	65%	\$0.08	84	111	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	Existing	482.79	18	\$129.00	15%	50%	\$0.02	39	53	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	Existing	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	Existing	1,008.38	50	\$75,000.00	15%	25%	\$1.65	20	33	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	Existing	0.00	45	\$37,881.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	Existing	0.00	20	\$246.00	15%	35%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	Existing	559.11	20	\$10,500.00	15%	50%	\$0.13	41	55	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	Existing	164.51	45	\$23,130.00	15%	35%	\$0.09	7	9	BEST Simulation
School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	Existing	1,024.32	3	\$18,300.00	10%	75%	\$0.43	137	187	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	Existing	744.33	3	\$9,525.00	2%	22%	\$0.28	31	55	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	Existing	0.00	5	\$168.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	Existing	266.24	15	\$6,600.00	15%	75%	\$2.58	32	45	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	Existing	2,539.45	18	\$5,100.00	15%	35%	\$0.20	106	142	DEER
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	Existing	12,361.85	20	\$22,466.06	100%	at stock turnover	\$0.19	147	149	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	Existing	7,512.35	15	\$3,828.00	13%	50%	\$0.06	627	772	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	Existing	0.00	20	\$34,833.00	48%	48%	\$10.00	0	0	BEST Simulation
School	Ventilation	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	3,319.49	20	\$120,000.00	10%	25%	\$0.16	19	19	AEG research & analysis
School	Ventilation	Commissioning	per 30,000 sqft School bldg.	New	675.55	3	\$28,800.00	10%	75%	\$0.78	17	17	6th Plan
School	Ventilation	Cool Roofs - Absorbptivity 0.2	per 30,000 sqft School bldg.	New	0.00	15	\$23,400.00	45%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Doors - High Efficiency - R-5	per 30,000 sqft School bldg.	New	0.00	10	\$4,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
School	Ventilation	Energy Management System	per 30,000 sqft School bldg.	New	605.24	15	\$9,525.00	20%	65%	\$0.10	10	10	BEST Simulation
School	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 30,000 sqft School bldg.	New	335.68	18	\$129.00	15%	35%	\$0.08	3	3	BEST Simulation
School	Ventilation	HVAC - Occupancy Sensors	per 30,000 sqft School bldg.	New	0.00	15	\$261.00	15%	75%	\$10.00	0	0	BEST Simulation
School	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 30,000 sqft School bldg.	New	655.58	50	\$75,000.00	15%	25%	\$2.65	2	2	6th Plan
School	Ventilation	Insulation - Ceiling - R-38	per 30,000 sqft School bldg.	New	0.00	45	\$37,881.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Ducting - R-8	per 30,000 sqft School bldg.	New	0.00	20	\$246.00	15%	50%	\$0.00	0	0	BEST Simulation
School	Ventilation	Insulation - Radiant Barrier - R-5	per 30,000 sqft School bldg.	New	382.00	20	\$10,500.00	15%	50%	\$0.14	5	5	BEST Simulation
School	Ventilation	Insulation - Wall Cavity - R-23	per 30,000 sqft School bldg.	New	23.21	45	\$23,130.00	15%	50%	\$0.72	0	0	BEST Simulation
School	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Ventilation	Retrocommissioning	per 30,000 sqft School bldg.	New	0.00	3	\$18,300.00	0%	0%	\$10.00	0	0	6th Plan
School	Ventilation	Strategic Energy Management	per 30,000 sqft School bldg.	New	491.15	3	\$9,525.00	2%	22%	\$0.33	5	5	BEST Simulation
School	Ventilation	Thermostat - Clock/Programmable	per 30,000 sqft School bldg.	New	0.00	5	\$447.00	10%	10%	\$10.00	0	0	BEST Simulation
School	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 30,000 sqft School bldg.	New	174.75	15	\$3,900.00	15%	75%	\$2.22	4	4	6th Plan
School	Ventilation	Ventilation - ECM on VAV Boxes	per 30,000 sqft School bldg.	New	1,686.26	18	\$5,100.00	15%	35%	\$0.29	13	13	DEER
School	Ventilation	Ventilation - Variable Air Volume	per 30,000 sqft School bldg.	New	12,409.43	20	\$22,469.21	100%	at stock turnover	\$0.19	11	11	BEST Simulation
School	Ventilation	Ventilation - Variable Speed Control	per 30,000 sqft School bldg.	New	5,236.73	15	\$3,828.00	19%	50%	\$0.09	61	61	BEST Simulation
School	Ventilation	Windows - High Efficiency - U-0.35 Window	per 30,000 sqft School bldg.	New	0.00	20	\$34,833.00	66%	66%	\$10.00	0	0	BEST Simulation
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	Existing	0.00	20	\$120,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,571.86	5	\$5,400.00	3%	75%	\$0.42	94	105	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	Existing	650.79	7	\$1,398.00	1%	4%	\$0.25	1	1	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	Existing	16,563.83	20	\$1,116.00	1%	9%	\$0.01	70	70	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	Existing	2,867.99	5	\$1,200.00	1%	10%	\$0.09	14	14	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	Existing	7,405.31	5	\$993.00	25%	65%	\$0.03	58	162	DEER
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

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School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	Existing	1,052.64	15	\$66.00	15%	25%	\$0.01	6	6	Hawaii TRM
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	Existing	75.11	15	\$9.00	15%	75%	\$0.01	2	2	DEER
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	Existing	1,793.52	15	\$2,421.00	16%	75%	\$0.15	55	58	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	Existing	6,200.72	20	\$12,501.00	1%	30%	\$0.18	93	99	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	Existing	632.23	13	\$54.51	19%	at stock turnover	\$0.01	23	22	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	Existing	2,684.33	5	\$5,400.00	3%	75%	\$0.42	99	108	AEG study for PN&L
School	Water Heating	Advanced New Construction Designs	per 30,000 sqft School bldg.	New	8,401.06	20	\$120,000.00	10%	25%	\$0.16	9	9	AEG research & analysis
School	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,440.83	5	\$5,400.00	6%	75%	\$0.42	12	12	AEG study for PN&L
School	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 30,000 sqft School bldg.	New	617.82	7	\$1,398.00	1%	2%	\$0.25	0	0	Developed from RTF
School	Water Heating	Water Heater - Desuperheater	per 30,000 sqft School bldg.	New	16,556.86	20	\$1,116.00	1%	11%	\$0.01	11	11	Developed from RTF (Residential)
School	Water Heating	Water Heater - Drainwater Heat Recovery	per 30,000 sqft School bldg.	New	2,891.28	5	\$1,200.00	0%	75%	\$0.09	16	16	AEG study for LA Dept of Water & Power
School	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 30,000 sqft School bldg.	New	7,365.23	5	\$993.00	25%	65%	\$0.03	8	21	DEER
School	Water Heating	Water Heater - Faucet Motion Sensor Control	per 30,000 sqft School bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
School	Water Heating	Water Heater - High Efficiency Circulation Pump	per 30,000 sqft School bldg.	New	1,020.95	15	\$66.00	15%	25%	\$0.01	1	1	Hawaii TRM
School	Water Heating	Water Heater - Install Timer	per 30,000 sqft School bldg.	New	75.04	15	\$9.00	15%	75%	\$0.01	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
School	Water Heating	Water Heater - Pipe Insulation	per 30,000 sqft School bldg.	New	1,742.43	15	\$2,421.00	1%	75%	\$0.15	9	9	BEST Simulation
School	Water Heating	Water Heater - Solar System	per 30,000 sqft School bldg.	New	5,846.51	20	\$12,501.00	1%	30%	\$0.19	12	12	BEST Simulation
School	Water Heating	Water Heating - EF 0.89	per 30,000 sqft School bldg.	New	632.23	13	\$54.51	19%	at stock turnover	\$0.01	5	5	BEST Simulation
School	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 30,000 sqft School bldg.	New	2,537.42	5	\$5,400.00	6%	75%	\$0.42	13	13	AEG study for PN&L
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	13,991.29	23	\$22,722.14	3%	at stock turnover	\$0.16	199	172	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,156.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$879.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	1,075.64	10	\$1,500.00	15%	35%	\$0.06	300	330	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	10,354.68	15	\$3,572.00	15%	75%	\$0.01	135	313	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	1,805.13	15	\$3,175.00	20%	65%	\$0.05	1,140	1,247	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	Existing	3,422.70	15	\$18,695.60	6%	at stock turnover	\$0.67	264	250	PacifiCorp Program Data
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	95.10	18	\$23.00	15%	50%	\$0.02	47	54	BEST Simulation
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	Existing	7,380.19	10	\$7,220.00	18%	75%	\$0.14	2,361	5,863	DEER
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	1,944.58	50	\$25,000.00	15%	25%	\$0.68	257	326	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	440.01	45	\$12,627.00	15%	35%	\$0.06	122	135	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	1,777.59	45	\$6,928.00	15%	35%	\$0.10	492	546	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	1,143.17	20	\$3,500.00	15%	50%	\$0.07	556	614	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	-1,194.57	45	\$7,710.00	15%	35%	\$0.06	-332	-367	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	Existing	6,055.07	15	\$4,093.15	3%	at stock turnover	\$0.08	214	199	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	1,977.18	3	\$6,100.00	10%	75%	\$0.25	1,728	1,972	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	Existing	10,965.99	23	\$23,313.42	78%	at stock turnover	\$0.22	1,944	1,961	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$31,747.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	1,432.32	3	\$3,175.00	3%	14%	\$0.16	212	282	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Office bldg.	Existing	12,312.21	23	\$4,868.87	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$2,156.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$9,912.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	6,940.77	20	\$40,000.00	10%	25%	\$0.10	662	675	AEG research & analysis
Small Office	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	New	11,551.90	23	\$19,338.18	4%	at stock turnover	\$0.14	268	255	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,156.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$879.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Commissioning	per 10,000 sqft Small Office bldg.	New	1,340.76	3	\$9,600.00	10%	75%	\$0.45	550	561	6th Plan
Small Office	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Office bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Office bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Office	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	751.64	10	\$1,500.00	15%	50%	\$0.07	167	171	AEG research & analysis
Small Office	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	8,471.29	15	\$3,572.00	15%	75%	\$0.01	50	103	Developed from RTF
Small Office	Cooling	Energy Management System	per 10,000 sqft Small Office bldg.	New	1,279.77	15	\$3,175.00	20%	65%	\$0.06	367	374	BEST Simulation
Small Office	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Office bldg.	New	3,422.70	15	\$24,251.62	8%	at stock turnover	\$0.87	180	165	PacifiCorp Program Data
Small Office	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	10,207.52	23	\$15,913.83	2%	at stock turnover	\$0.06	69	69	BEST Simulation
Small Office	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	429.18	18	\$22.00	15%	35%	\$0.00	55	56	BEST Simulation
Small Office	Cooling	HVAC - Economizer	per 10,000 sqft Small Office bldg.	New	4,869.02	10	\$7,220.00	18%	75%	\$0.20	266	1,528	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	1,309.00	50	\$25,000.00	15%	25%	\$1.00	83	84	6th Plan
Small Office	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	-313.62	45	\$12,627.00	15%	50%	\$0.08	-70	-71	BEST Simulation
Small Office	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	863.05	20	\$82.00	15%	50%	\$0.06	192	196	BEST Simulation
Small Office	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	1,207.41	45	\$6,928.00	15%	50%	\$0.11	268	273	BPA
Small Office	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	798.73	20	\$3,500.00	15%	50%	\$0.08	178	181	BEST Simulation
Small Office	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	-15.69	45	\$7,710.00	15%	50%	\$0.45	-3	-4	BEST Simulation
Small Office	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Office bldg.	New	5,322.74	15	\$3,886.05	4%	at stock turnover	\$0.08	136	124	BEST Simulation
Small Office	Cooling	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Cooling	RTU - EER 12.0	per 10,000 sqft Small Office bldg.	New	9,025.16	23	\$19,841.40	100%	at stock turnover	\$0.23	1,330	1,351	BEST Simulation
Small Office	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Office bldg.	New	0.00	15	\$31,747.00	15%	75%	\$10.00	0	0	DEER
Small Office	Cooling	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	1,034.38	3	\$3,175.00	3%	14%	\$0.19	94	96	BEST Simulation
Small Office	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	10	\$814.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Office bldg.	New	0.00	4	\$814.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Office bldg.	New	0.00	15	\$2,156.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Office bldg.	New	0.00	15	\$9,912.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	77.44	15	\$3,175.00	20%	65%	\$0.05	112	176	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	212.96	5	\$244.00	15%	25%	\$0.19	66	135	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	52.93	10	\$609.00	33%	60%	\$1.13	44	93	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	Existing	1,228.27	10	\$953.00	15%	30%	\$0.08	587	1,141	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	664.54	15	-\$32.08	100%	at stock turnover	-\$0.02	10	17	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	847.28	15	\$254.10	100%	at stock turnover	\$0.01	2,784	2,615	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	227.15	15	\$53.49	100%	at stock turnover	\$0.03	935	918	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	53.15	15	\$5.69	100%	at stock turnover	\$0.01	0	1	EIA 2011
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	70.36	3	\$6,100.00	10%	75%	\$0.25	140	231	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	182.73	6	\$4.74	100%	at stock turnover	\$0.00	0	8	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	148.72	15	\$86.34	100%	at stock turnover	\$0.04	2,031	2,322	EIA 2011
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	61.70	3	\$3,175.00	3%	14%	\$0.16	21	50	BEST Simulation
Small Office	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	357.65	20	\$40,000.00	10%	25%	\$0.10	58	92	AEG research & analysis
Small Office	Exterior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	61.48	3	\$9,600.00	10%	75%	\$0.45	43	68	6th Plan
Small Office	Exterior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	69.78	15	\$3,175.00	20%	65%	\$0.06	34	54	BEST Simulation
Small Office	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	186.79	5	\$244.00	15%	25%	\$0.19	20	32	Illinois TRM
Small Office	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	54.77	10	\$609.00	44%	60%	\$0.98	10	15	AEG research & analysis
Small Office	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Office bldg.	New	1,101.29	10	\$953.00	15%	30%	\$0.09	181	285	AEG research & analysis
Small Office	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	664.54	15	-\$32.08	100%	at stock turnover	-\$0.02	7	13	EIA 2011
Small Office	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	847.28	15	\$254.10	100%	at stock turnover	\$0.01	1,287	1,217	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	227.15	15	\$53.49	100%	at stock turnover	\$0.03	431	430	EIA 2011
Small Office	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	53.15	15	\$5.69	100%	at stock turnover	\$0.01	0	1	EIA 2011
Small Office	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	182.73	6	\$4.74	100%	at stock turnover	\$0.00	0	7	EIA 2011
Small Office	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	148.72	15	\$86.34	100%	at stock turnover	\$0.03	965	1,012	EIA 2011
Small Office	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	53.44	3	\$3,175.00	3%	14%	\$0.19	8	13	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,889.59	15	\$4.56	4%	at stock turnover	\$0.00	71	70	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	498.33	10	\$4.85	4%	at stock turnover	\$0.00	25	22	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	844.82	18	\$20.57	4%	at stock turnover	\$0.00	9	9	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	897.23	10	\$10.91	4%	at stock turnover	\$0.00	31	27	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,889.59	15	\$5.70	5%	at stock turnover	\$0.00	46	45	Illinois TRM
Small Office	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	498.33	10	\$6.06	5%	at stock turnover	\$0.00	14	13	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Office	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	844.82	18	\$25.72	5%	at stock turnover	\$0.00	5	5	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Office	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	897.23	10	\$13.64	5%	at stock turnover	\$0.00	17	15	Developed from RTF "ComCookingConvectionOven" v2.0
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Office bldg.	Existing	1,787.25	23	\$23,324.33	3%	at stock turnover	\$0.16	21	19	BEST Simulation
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	2,273.02	10	\$1,500.00	15%	35%	\$0.06	154	166	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	Existing	35,246.97	15	\$3,572.00	15%	75%	\$0.01	3,097	6,194	Developed from RTF
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	3,874.61	15	\$3,175.00	20%	65%	\$0.05	603	636	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	Existing	9,750.62	23	\$11,978.80	1%	at stock turnover	\$0.06	75	76	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	-280.35	18	\$23.00	15%	50%	\$0.02	-34	-37	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	15,114.39	45	\$12,627.00	15%	35%	\$0.06	1,020	1,102	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	Existing	3,692.12	45	\$6,928.00	15%	35%	\$0.10	244	269	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	2,896.72	20	\$3,500.00	15%	50%	\$0.07	336	370	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	11,253.69	45	\$7,710.00	15%	35%	\$0.06	771	820	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	4,394.87	3	\$6,100.00	10%	75%	\$0.25	938	1,041	6th Plan
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	Existing	0.00	14	\$44,638.00	3%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	3,183.76	3	\$3,175.00	3%	14%	\$0.16	115	149	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	19,663.83	20	\$40,000.00	10%	25%	\$0.10	363	364	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Commissioning	per 10,000 sqft Small Office bldg.	New	4,046.33	3	\$9,600.00	10%	75%	\$0.45	322	324	6th Plan
Small Office	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	2,220.52	10	\$1,500.00	15%	50%	\$0.07	96	96	AEG research & analysis
Small Office	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Office bldg.	New	35,230.40	15	\$3,572.00	15%	75%	\$0.01	1,021	2,042	Developed from RTF
Small Office	Heating	Energy Management System	per 10,000 sqft Small Office bldg.	New	3,744.40	15	\$3,175.00	20%	65%	\$0.06	208	209	BEST Simulation
Small Office	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Office bldg.	New	8,967.82	23	\$11,881.05	2%	at stock turnover	\$0.06	56	56	BEST Simulation
Small Office	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	323.69	18	\$22.00	15%	35%	\$0.00	8	8	BEST Simulation
Small Office	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	12,704.43	45	\$12,627.00	15%	50%	\$0.08	548	550	BEST Simulation
Small Office	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	-757.97	20	\$82.00	15%	50%	\$0.06	-33	-33	BEST Simulation
Small Office	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Office bldg.	New	3,421.34	45	\$6,928.00	15%	50%	\$0.11	147	148	BPA
Small Office	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	2,761.92	20	\$3,500.00	15%	50%	\$0.08	119	119	BEST Simulation
Small Office	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	1,171.54	45	\$7,710.00	15%	50%	\$0.45	50	50	BEST Simulation
Small Office	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Office bldg.	New	0.00	14	\$44,638.00	6%	75%	\$10.00	0	0	DEER
Small Office	Heating	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	2,931.28	3	\$3,175.00	3%	14%	\$0.19	52	52	BEST Simulation
Small Office	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	473.34	15	\$3,175.00	20%	65%	\$0.05	658	1,077	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	646.39	15	-\$31.20	100%	at stock turnover	-\$0.02	19	34	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	824.13	15	\$247.16	100%	at stock turnover	\$0.01	5,393	5,066	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	Existing	2,880.62	5	\$6,392.00	5%	15%	\$0.36	285	611	Illinois TRM
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	Existing	4,602.39	5	\$453.00	15%	50%	\$0.02	1,751	3,245	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	Existing	2,814.01	12	\$4,000.00	3%	25%	\$0.13	1,869	3,854	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	Existing	422.38	16	\$285.00	1%	3%	\$0.05	26	60	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	3,051.79	10	\$1,182.00	7%	45%	\$0.04	2,574	7,227	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	Existing	324.41	5	\$1,100.00	10%	25%	\$0.44	40	114	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	231.76	15	\$54.58	100%	at stock turnover	\$0.03	24,979	24,541	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	54.23	15	\$5.81	100%	at stock turnover	\$0.01	0	26	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	449.25	3	\$6,100.00	10%	75%	\$0.25	877	1,477	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	203.04	6	\$5.27	100%	at stock turnover	\$0.00	0	22	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	165.25	15	\$95.93	100%	at stock turnover	\$0.04	5,810	6,642	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	390.52	3	\$3,175.00	3%	14%	\$0.16	129	322	BEST Simulation
Small Office	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,441.11	20	\$40,000.00	10%	25%	\$0.10	397	631	AEG research & analysis
Small Office	Interior Lighting	Commissioning	per 10,000 sqft Small Office bldg.	New	404.62	3	\$9,600.00	10%	75%	\$0.45	283	450	6th Plan
Small Office	Interior Lighting	Energy Management System	per 10,000 sqft Small Office bldg.	New	442.14	15	\$3,175.00	20%	65%	\$0.06	216	343	BEST Simulation
Small Office	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	646.39	15	-\$31.20	100%	at stock turnover	-\$0.02	14	26	EIA 2011
Small Office	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	824.13	15	\$247.16	100%	at stock turnover	\$0.01	2,493	2,359	EIA 2011
Small Office	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Office bldg.	New	2,658.87	5	\$6,392.00	5%	15%	\$0.38	96	152	Illinois TRM
Small Office	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Office bldg.	New	4,188.28	5	\$453.00	15%	50%	\$0.02	536	849	Illinois TRM
Small Office	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Office bldg.	New	2,549.41	12	\$4,000.00	4%	25%	\$0.14	566	899	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Office bldg.	New	392.53	16	\$285.00	1%	3%	\$0.06	9	14	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	2,765.71	10	\$1,182.00	22%	45%	\$0.05	317	1,079	Ameren Missouri TRM
Small Office	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Office bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 10,000 sqft Small Office bldg.	New	0.00	8	\$1,316.00	7%	15%	\$10.00	0	0	DEER
Small Office	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Office bldg.	New	278.87	5	\$1,100.00	10%	25%	\$0.47	13	24	AEG research & analysis
Small Office	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	231.76	15	\$54.58	100%	at stock turnover	\$0.03	11,504	11,477	EIA 2011
Small Office	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	54.23	15	\$5.81	100%	at stock turnover	\$0.01	0	17	EIA 2011
Small Office	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Office	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	203.04	6	\$5.27	100%	at stock turnover	\$0.00	0	19	EIA 2011
Small Office	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	165.25	15	\$95.93	100%	at stock turnover	\$0.03	2,761	2,893	EIA 2011
Small Office	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	354.38	3	\$3,175.00	3%	14%	\$0.19	55	87	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	74.05	7	\$1,397.00	1%	4%	\$0.17	4	4	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	Existing	1.08	7	\$31.00	1%	3%	\$5.47	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	Existing	52.94	10	\$195.00	1%	3%	\$0.55	2	2	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	Existing	376.12	15	\$3,772.00	15%	75%	\$1.20	84	84	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	Existing	156.87	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	Existing	28.15	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	406.96	3	\$3,175.00	3%	14%	\$0.16	110	108	BEST Simulation
Small Office	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	84.88	7	\$1,397.00	1%	2%	\$0.17	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Office bldg.	New	1.24	7	\$2.00	1%	3%	\$0.31	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Office	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Office bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Office	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Office bldg.	New	0.00	13	\$0.00	24%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Office bldg.	New	376.12	15	\$3,772.00	15%	75%	\$1.20	30	30	AEG research & analysis
Small Office	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Office bldg.	New	156.87	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Office bldg.	New	28.15	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Office	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Office bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Office	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	402.15	3	\$3,175.00	3%	14%	\$0.19	48	47	BEST Simulation
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	4,873.32	6	\$36.57	100%	at stock turnover	\$0.00	2,805	2,963	ENERGY STAR Calculator

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	Existing	127.77	4	\$265.00	10%	50%	\$0.58	506	567	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	959.45	6	\$23.78	100%	at stock turnover	\$0.01	552	583	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	847.65	6	\$57.31	100%	at stock turnover	\$0.01	195	206	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	376.14	5	\$400.00	10%	25%	\$0.25	562	627	5th Plan
Small Office	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	495.61	6	\$0.74	20%	at stock turnover	\$0.00	113	119	Assumed same as Desktop
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	Existing	1,778.15	6	\$13.34	100%	at stock turnover	\$0.00	2,678	2,760	Assumed same as Desktop
Small Office	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Office bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Office bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Small Office	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	4,873.32	6	\$36.57	100%	at stock turnover	\$0.00	1,233	1,242	ENERGY STAR Calculator
Small Office	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Office bldg.	New	140.49	4	\$265.00	10%	50%	\$0.52	181	195	Developed from RTF
Small Office	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	959.45	6	\$23.78	100%	at stock turnover	\$0.01	243	244	ENERGY STAR Calculator
Small Office	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	847.65	6	\$57.31	100%	at stock turnover	\$0.01	86	86	ENERGY STAR Calculator
Small Office	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	415.06	5	\$400.00	10%	25%	\$0.22	201	216	5th Plan
Small Office	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,323.04	6	\$16.92	100%	at stock turnover	\$0.00	65	65	ENERGY STAR Calculator
Small Office	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Office bldg.	New	1,778.15	6	\$13.34	100%	at stock turnover	\$0.00	1,031	1,028	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,631.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	Existing	248.21	9	\$1.42	5%	at stock turnover	\$0.00	5	5	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	Existing	1,232.00	9	\$106.00	0%	10%	\$0.01	23	23	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	Existing	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$6,697.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$5,387.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	Existing	0.00	4	\$3,274.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	Existing	572.55	10	\$8.46	5%	at stock turnover	\$0.00	35	31	EIA 2011
Small Office	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Office bldg.	New	0.00	5	\$1,547.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Office bldg.	New	0.00	8	\$196.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Office bldg.	New	0.00	5	\$2,532.00	0%	0%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Office bldg.	New	248.21	9	\$1.71	6%	at stock turnover	\$0.00	3	3	EIA 2011
Small Office	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Office bldg.	New	0.00	8	\$2,543.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Office bldg.	New	1,232.00	9	\$106.00	0%	10%	\$0.01	9	9	PacifiCorp Program Data
Small Office	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Office bldg.	New	0.00	4	\$2,306.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Office bldg.	New	0.00	16	\$162.00	0%	0%	\$10.00	0	0	DEER
Small Office	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Office bldg.	New	0.00	15	\$6,697.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Office bldg.	New	0.00	15	\$5,387.00	0%	0%	\$10.00	0	0	AEO 2013
Small Office	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Office bldg.	New	0.00	4	\$3,274.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Office	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Office bldg.	New	572.55	10	\$10.16	6%	at stock turnover	\$0.01	22	21	EIA 2011
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	Existing	637.92	15	\$3,175.00	20%	65%	\$0.05	389	484	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	Existing	316.57	18	\$23.00	15%	50%	\$0.02	153	207	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	Existing	728.46	50	\$25,000.00	15%	25%	\$0.68	94	141	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	Existing	471.13	45	\$12,627.00	15%	35%	\$0.06	126	159	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$82.00	15%	35%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	Existing	402.93	20	\$3,500.00	15%	50%	\$0.07	188	238	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	Existing	118.93	45	\$7,710.00	15%	35%	\$0.06	32	40	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	Existing	740.23	3	\$6,100.00	10%	75%	\$0.25	630	811	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	Existing	536.23	3	\$3,175.00	3%	14%	\$0.16	77	125	BEST Simulation
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	Existing	0.00	5	\$167.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	Existing	192.33	15	\$2,200.00	15%	25%	\$1.22	25	32	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	Existing	1,829.95	18	\$1,700.00	15%	35%	\$0.09	486	617	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	Existing	8,263.58	20	\$8,396.32	100%	at stock turnover	\$0.11	1,662	1,680	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	Existing	5,204.09	15	\$1,705.00	13%	25%	\$0.04	839	1,023	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$25,217.00	48%	48%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,303.43	20	\$40,000.00	10%	25%	\$0.10	186	192	AEG research & analysis
Small Office	Ventilation	Commissioning	per 10,000 sqft Small Office bldg.	New	470.44	3	\$9,600.00	10%	75%	\$0.45	164	169	6th Plan
Small Office	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Office bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Office bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Office	Ventilation	Energy Management System	per 10,000 sqft Small Office bldg.	New	428.24	15	\$3,175.00	20%	65%	\$0.06	104	107	BEST Simulation
Small Office	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Office bldg.	New	290.43	18	\$22.00	15%	35%	\$0.00	31	32	BEST Simulation
Small Office	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Office bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Office bldg.	New	458.99	50	\$25,000.00	15%	25%	\$1.00	25	25	6th Plan
Small Office	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Office bldg.	New	143.61	45	\$12,627.00	15%	50%	\$0.08	27	28	BEST Simulation
Small Office	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Office bldg.	New	76.54	20	\$82.00	15%	50%	\$0.06	14	15	BEST Simulation
Small Office	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Office bldg.	New	265.07	20	\$3,500.00	15%	50%	\$0.08	50	52	BEST Simulation
Small Office	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Office bldg.	New	15.77	45	\$7,710.00	15%	50%	\$0.45	3	3	BEST Simulation
Small Office	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Ventilation	Retrocommissioning	per 10,000 sqft Small Office bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Office	Ventilation	Strategic Energy Management	per 10,000 sqft Small Office bldg.	New	340.80	3	\$3,175.00	3%	14%	\$0.19	26	27	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Office bldg.	New	0.00	5	\$448.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Office	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Office bldg.	New	121.19	15	\$1,300.00	15%	25%	\$1.08	6	7	6th Plan
Small Office	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Office bldg.	New	1,170.08	18	\$1,700.00	15%	35%	\$0.14	126	130	DEER
Small Office	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Office bldg.	New	7,506.21	20	\$8,239.63	100%	at stock turnover	\$0.11	625	636	BEST Simulation
Small Office	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Office bldg.	New	3,378.45	15	\$1,705.00	19%	25%	\$0.06	101	104	BEST Simulation
Small Office	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Office bldg.	New	0.00	20	\$25,217.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	844.95	5	\$1,800.00	3%	75%	\$0.38	254	419	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	Existing	1,193.55	7	\$1,397.00	1%	4%	\$0.17	15	24	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	Existing	4,886.43	20	\$1,117.00	1%	10%	\$0.02	182	282	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	905.91	5	\$400.00	1%	10%	\$0.08	36	56	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	Existing	2,398.17	5	\$110.00	25%	65%	\$0.01	156	655	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	Existing	0.00	15	\$115.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	Existing	44.34	15	\$3.00	15%	75%	\$0.01	12	18	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	Existing	564.63	15	\$1,397.00	16%	75%	\$0.23	142	225	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	Existing	1,798.49	20	\$12,500.00	1%	30%	\$0.51	213	362	BEST Simulation
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	Existing	8,072.86	14	\$1,179.93	35%	at stock turnover	\$0.02	3,299	3,180	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	Existing	880.51	5	\$1,800.00	3%	75%	\$0.38	269	431	AEG study for PN&L
Small Office	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Office bldg.	New	2,599.26	20	\$40,000.00	10%	25%	\$0.10	53	77	AEG research & analysis
Small Office	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	793.13	5	\$1,800.00	6%	75%	\$0.38	75	109	AEG study for PN&L
Small Office	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Office bldg.	New	1,083.25	7	\$1,397.00	1%	2%	\$0.17	1	2	Developed from RTF
Small Office	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Office bldg.	New	4,719.35	20	\$1,117.00	1%	12%	\$0.02	67	97	Developed from RTF (Residential)
Small Office	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Office bldg.	New	871.20	5	\$400.00	0%	75%	\$0.08	89	130	AEG study for LA Dept of Water & Power
Small Office	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Office bldg.	New	2,286.34	5	\$110.00	25%	65%	\$0.01	47	183	DEER
Small Office	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Office bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Office	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Office bldg.	New	0.00	15	\$115.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Office	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Office bldg.	New	42.46	15	\$3.00	15%	75%	\$0.01	4	5	DEER
Small Office	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Office bldg.	New	513.27	15	\$1,397.00	1%	75%	\$0.23	52	75	BEST Simulation
Small Office	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Office bldg.	New	1,628.80	20	\$12,500.00	1%	30%	\$0.51	64	93	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Office	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Office bldg.	New	8,072.86	14	\$1,179.93	35%	at stock turnover	\$0.02	1,628	1,576	BEST Simulation
Small Office	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Office bldg.	New	763.24	5	\$1,800.00	6%	75%	\$0.38	72	104	AEG study for PN&L
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	11,820.40	23	\$18,353.98	2%	at stock turnover	\$0.06	84	72	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	Existing	6,473.97	23	\$2,161.39	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,437.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$688.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	3,400.73	15	\$7,800.00	45%	50%	\$2.12	133	154	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	Existing	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	826.89	10	\$1,500.00	15%	35%	\$0.08	136	150	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	7,107.85	15	\$2,381.00	15%	75%	\$0.01	64	147	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	1,390.44	15	\$3,175.00	20%	65%	\$0.06	518	568	BEST Simulation
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	10,403.48	23	\$15,091.58	1%	at stock turnover	\$0.05	40	40	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	145.10	18	\$18.00	15%	50%	\$0.05	42	48	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	Existing	6,198.40	10	\$5,655.00	18%	75%	\$0.13	996	2,489	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	1,508.03	50	\$25,000.00	15%	25%	\$0.89	118	149	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	637.57	45	\$12,627.00	15%	35%	\$0.07	105	116	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	606.77	20	\$82.00	15%	50%	\$0.04	177	193	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	1,367.97	45	\$6,928.00	15%	35%	\$0.12	223	248	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	879.73	20	\$3,500.00	15%	50%	\$0.09	252	279	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	-918.32	45	\$7,710.00	15%	35%	\$0.07	-150	-167	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	1,533.32	3	\$6,100.00	10%	75%	\$0.31	792	905	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	Existing	9,250.28	23	\$18,831.60	64%	at stock turnover	\$0.21	828	836	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$24,868.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	1,107.69	3	\$3,175.00	0%	3%	\$0.20	26	35	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	Existing	10,378.36	23	\$3,270.27	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$1,437.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$6,608.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	6,362.63	20	\$40,000.00	10%	25%	\$0.12	350	357	AEG research & analysis
Small Retail	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	11,531.64	23	\$15,864.05	3%	at stock turnover	\$0.05	62	51	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 10,000 sqft Small Retail bldg.	New	5,844.22	23	\$1,931.58	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,437.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$688.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Commissioning	per 10,000 sqft Small Retail bldg.	New	1,237.41	3	\$9,600.00	10%	75%	\$0.54	293	299	6th Plan
Small Retail	Cooling	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Data Center - Air Flow Optimization and Commissioning	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$21,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Cooling	Destratification Fans (HVLS)	per 10,000 sqft Small Retail bldg.	New	0.00	12	\$4,500.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Small Retail	Cooling	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	689.07	10	\$1,500.00	15%	50%	\$0.08	89	90	AEG research & analysis
Small Retail	Cooling	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	5,809.51	15	\$2,381.00	15%	75%	\$0.01	23	47	Developed from RTF
Small Retail	Cooling	Energy Management System	per 10,000 sqft Small Retail bldg.	New	1,164.59	15	\$3,175.00	20%	65%	\$0.07	192	196	BEST Simulation
Small Retail	Cooling	Evaporative Cooling - Indirect/Direct	per 10,000 sqft Small Retail bldg.	New	2,886.99	15	\$62,806.41	24%	at stock turnover	\$2.67	257	235	PacifiCorp Program Data
Small Retail	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	10,151.26	23	\$13,044.24	1%	at stock turnover	\$0.04	29	29	BEST Simulation
Small Retail	Cooling	HVAC - Chilled Water Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	126.20	18	\$17.00	15%	50%	\$0.00	16	17	BEST Simulation
Small Retail	Cooling	HVAC - Economizer	per 10,000 sqft Small Retail bldg.	New	4,920.66	10	\$5,655.00	18%	75%	\$0.15	133	762	DEER
Small Retail	Cooling	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	1,208.08	50	\$25,000.00	15%	25%	\$1.13	44	45	6th Plan
Small Retail	Cooling	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	-282.21	45	\$12,627.00	15%	50%	\$0.09	-36	-37	BEST Simulation
Small Retail	Cooling	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	298.94	20	\$82.00	15%	50%	\$0.01	38	39	BEST Simulation
Small Retail	Cooling	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	1,106.83	45	\$6,928.00	15%	50%	\$0.14	142	145	BPA
Small Retail	Cooling	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	732.20	20	\$3,500.00	15%	50%	\$0.10	94	96	BEST Simulation
Small Retail	Cooling	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	-14.48	45	\$7,710.00	15%	50%	\$0.59	-2	-2	BEST Simulation
Small Retail	Cooling	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	PTAC - EER 12.2	per 10,000 sqft Small Retail bldg.	New	3,653.18	15	\$2,667.13	4%	at stock turnover	\$0.08	60	54	BEST Simulation
Small Retail	Cooling	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Cooling	RTU - EER 12.0	per 10,000 sqft Small Retail bldg.	New	9,035.58	23	\$16,276.87	89%	at stock turnover	\$0.19	655	665	BEST Simulation
Small Retail	Cooling	RTU - Evaporative Precooler	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$24,868.00	15%	75%	\$10.00	0	0	DEER
Small Retail	Cooling	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	893.93	3	\$3,175.00	0%	3%	\$0.23	13	13	BEST Simulation
Small Retail	Cooling	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 10,000 sqft Small Retail bldg.	New	9,462.60	23	\$2,922.57	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$543.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$543.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$1,437.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$6,608.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Cooling	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	92.70	15	\$3,175.00	20%	65%	\$0.06	81	130	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	248.45	5	\$4,548.00	15%	25%	\$2.99	45	99	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	178.09	10	\$2,603.00	33%	60%	\$1.48	89	194	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	Existing	1,469.00	10	\$4,074.00	15%	30%	\$0.31	421	851	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	178.08	15	-\$7.05	100%	at stock turnover	-\$0.01	7	10	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	227.05	15	\$55.87	100%	at stock turnover	\$0.01	1,943	1,804	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	34.47	15	\$6.66	100%	at stock turnover	\$0.03	1,119	1,090	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	8.07	15	\$0.71	100%	at stock turnover	\$0.01	0	1	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	85.27	3	\$6,100.00	10%	75%	\$0.31	102	173	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	39.24	6	\$0.84	100%	at stock turnover	\$0.00	0	2	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	31.94	15	\$15.21	100%	at stock turnover	\$0.03	560	639	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	79.59	3	\$3,175.00	0%	3%	\$0.20	5	11	BEST Simulation
Small Retail	Exterior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	429.15	20	\$40,000.00	10%	25%	\$0.12	40	61	AEG research & analysis
Small Retail	Exterior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	69.21	3	\$9,600.00	10%	75%	\$0.54	28	42	6th Plan
Small Retail	Exterior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	77.69	15	\$3,175.00	20%	65%	\$0.07	22	33	BEST Simulation
Small Retail	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	201.37	5	\$4,548.00	15%	25%	\$3.44	12	19	Illinois TRM
Small Retail	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	153.24	10	\$2,603.00	44%	60%	\$1.60	15	23	AEG research & analysis
Small Retail	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 10,000 sqft Small Retail bldg.	New	1,193.79	10	\$4,074.00	15%	30%	\$0.35	111	170	AEG research & analysis
Small Retail	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	178.08	15	-\$7.05	100%	at stock turnover	-\$0.01	5	7	EIA 2011
Small Retail	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	227.05	15	\$55.87	100%	at stock turnover	\$0.01	803	750	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	34.47	15	\$6.66	100%	at stock turnover	\$0.03	462	456	EIA 2011
Small Retail	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	8.07	15	\$0.71	100%	at stock turnover	\$0.01	0	0	EIA 2011
Small Retail	Exterior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	39.24	6	\$0.84	100%	at stock turnover	\$0.00	0	2	EIA 2011
Small Retail	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	31.94	15	\$15.21	100%	at stock turnover	\$0.03	232	244	EIA 2011
Small Retail	Exterior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	64.68	3	\$3,175.00	0%	3%	\$0.23	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	3,507.75	15	\$3.27	4%	at stock turnover	\$0.00	32	31	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	357.50	10	\$3.48	4%	at stock turnover	\$0.00	11	10	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	606.07	18	\$14.76	4%	at stock turnover	\$0.00	4	4	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	643.66	10	\$7.83	4%	at stock turnover	\$0.00	14	12	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Food Preparation	Dishwasher - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	3,507.75	15	\$4.91	5%	at stock turnover	\$0.00	22	21	Illinois TRM
Small Retail	Food Preparation	Fryer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	357.50	10	\$5.22	5%	at stock turnover	\$0.00	7	6	Developed from RTF "ComCookingConvectionFryer" v2.0
Small Retail	Food Preparation	Hot Food Container - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	606.07	18	\$22.14	5%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Small Retail	Food Preparation	Oven - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	643.66	10	\$11.74	5%	at stock turnover	\$0.00	8	7	Developed from RTF "ComCookingConvectionOven" v2.0
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	Existing	2,882.42	23	\$7,730.94	2%	at stock turnover	\$0.06	18	16	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	-2,791.12	15	\$7,800.00	45%	50%	\$2.13	-26	-29	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	1,765.39	10	\$1,500.00	15%	35%	\$0.08	68	75	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	28,010.74	15	\$2,381.00	15%	75%	\$0.01	1,426	2,853	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	3,061.97	15	\$3,175.00	20%	65%	\$0.06	277	291	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	Existing	2,588.29	23	\$5,828.22	1%	at stock turnover	\$0.05	9	9	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	-192.27	18	\$18.00	15%	50%	\$0.05	-14	-15	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	12,128.58	45	\$12,627.00	15%	35%	\$0.07	482	512	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-350.90	20	\$82.00	15%	50%	\$0.04	-25	-26	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	Existing	2,917.68	45	\$6,928.00	15%	35%	\$0.12	112	123	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	2,289.13	20	\$3,500.00	15%	50%	\$0.09	154	169	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	8,739.86	45	\$7,710.00	15%	35%	\$0.07	342	369	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	3,482.69	3	\$6,100.00	10%	75%	\$0.31	431	478	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	Existing	0.00	14	\$18,589.00	3%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	2,515.95	3	\$3,175.00	0%	3%	\$0.20	14	19	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	14,812.23	20	\$40,000.00	10%	25%	\$0.12	143	143	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Air Source Heat Pump - EER 12, COP 3.4	per 10,000 sqft Small Retail bldg.	New	2,418.46	23	\$6,994.46	3%	at stock turnover	\$0.05	11	9	BEST Simulation
Small Retail	Heating	Commissioning	per 10,000 sqft Small Retail bldg.	New	3,056.55	3	\$9,600.00	10%	75%	\$0.54	128	128	6th Plan
Small Retail	Heating	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	1,682.84	10	\$1,500.00	15%	50%	\$0.08	38	38	AEG research & analysis
Small Retail	Heating	Ductless Mini Split Heat Pump	per 10,000 sqft Small Retail bldg.	New	27,983.15	15	\$2,381.00	15%	75%	\$0.01	420	841	Developed from RTF
Small Retail	Heating	Energy Management System	per 10,000 sqft Small Retail bldg.	New	2,843.95	15	\$3,175.00	20%	65%	\$0.07	83	83	BEST Simulation
Small Retail	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 10,000 sqft Small Retail bldg.	New	1,981.66	23	\$5,037.57	1%	at stock turnover	\$0.04	5	5	BEST Simulation
Small Retail	Heating	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	296.00	18	\$17.00	15%	50%	\$0.00	7	7	BEST Simulation
Small Retail	Heating	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	11,146.76	45	\$12,627.00	15%	50%	\$0.09	252	252	BEST Simulation
Small Retail	Heating	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	215.38	20	\$82.00	15%	50%	\$0.01	5	5	BEST Simulation
Small Retail	Heating	Insulation - Foundation - R-10	per 10,000 sqft Small Retail bldg.	New	2,577.25	45	\$6,928.00	15%	50%	\$0.14	58	58	BPA
Small Retail	Heating	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	2,080.47	20	\$3,500.00	15%	50%	\$0.10	47	47	BEST Simulation
Small Retail	Heating	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	884.98	45	\$7,710.00	15%	50%	\$0.59	20	20	BEST Simulation
Small Retail	Heating	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Heating	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Heating	Space Heating - Heat Recovery Ventilator	per 10,000 sqft Small Retail bldg.	New	0.00	14	\$18,589.00	6%	75%	\$10.00	0	0	DEER
Small Retail	Heating	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	2,208.11	3	\$3,175.00	0%	3%	\$0.23	6	6	BEST Simulation
Small Retail	Heating	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Heating	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	553.88	15	\$3,175.00	20%	65%	\$0.06	478	778	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	396.16	15	-\$15.69	100%	at stock turnover	-\$0.01	19	28	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	505.10	15	\$124.29	100%	at stock turnover	\$0.01	5,415	5,029	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	Existing	2,639.75	5	\$18,917.00	5%	15%	\$1.14	160	348	Illinois TRM
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	Existing	4,201.62	5	\$1,157.00	15%	50%	\$0.05	977	1,841	Illinois TRM
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	Existing	3,069.64	12	\$4,000.00	3%	25%	\$0.12	1,226	2,634	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	Existing	442.95	16	\$729.00	1%	3%	\$0.12	16	41	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	3,294.87	10	\$3,017.00	7%	45%	\$0.10	1,654	4,909	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	Existing	0.00	25	\$12,300.00	15%	25%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$3,300.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	Existing	413.60	5	\$1,100.00	10%	25%	\$0.34	27	94	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	105.80	15	\$20.44	100%	at stock turnover	\$0.03	14,282	13,920	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	24.76	15	\$2.18	100%	at stock turnover	\$0.01	0	10	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	490.82	3	\$6,100.00	10%	75%	\$0.31	575	995	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	113.78	6	\$2.42	100%	at stock turnover	\$0.00	0	14	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	92.60	15	\$44.11	100%	at stock turnover	\$0.03	3,727	4,256	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	425.94	3	\$3,175.00	0%	3%	\$0.20	23	62	BEST Simulation
Small Retail	Interior Lighting	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	2,528.24	20	\$40,000.00	10%	25%	\$0.12	231	359	AEG research & analysis
Small Retail	Interior Lighting	Commissioning	per 10,000 sqft Small Retail bldg.	New	422.77	3	\$9,600.00	10%	75%	\$0.54	166	258	6th Plan
Small Retail	Interior Lighting	Energy Management System	per 10,000 sqft Small Retail bldg.	New	477.12	15	\$3,175.00	20%	65%	\$0.07	131	204	BEST Simulation
Small Retail	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	396.16	15	-\$15.69	100%	at stock turnover	-\$0.01	13	19	EIA 2011
Small Retail	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	505.10	15	\$124.29	100%	at stock turnover	\$0.01	2,238	2,089	EIA 2011
Small Retail	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 10,000 sqft Small Retail bldg.	New	2,323.30	5	\$18,917.00	5%	15%	\$1.24	47	73	Illinois TRM
Small Retail	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 10,000 sqft Small Retail bldg.	New	3,720.88	5	\$1,157.00	15%	50%	\$0.06	266	412	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Interior Lighting	Interior Lighting - Daylighting Controls	per 10,000 sqft Small Retail bldg.	New	2,640.47	12	\$4,000.00	4%	25%	\$0.13	328	511	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - LED Exit Lighting	per 10,000 sqft Small Retail bldg.	New	381.46	16	\$729.00	1%	3%	\$0.14	5	7	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	2,823.87	10	\$3,017.00	22%	45%	\$0.11	181	604	Ameren Missouri TRM
Small Retail	Interior Lighting	Interior Lighting - Skylights	per 10,000 sqft Small Retail bldg.	New	0.00	25	\$12,300.00	18%	25%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$3,300.00	7%	15%	\$10.00	0	0	DEER
Small Retail	Interior Lighting	Interior Screw-in - Task Lighting	per 10,000 sqft Small Retail bldg.	New	288.10	5	\$1,100.00	10%	25%	\$0.46	7	14	AEG research & analysis
Small Retail	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	105.80	15	\$20.44	100%	at stock turnover	\$0.03	5,893	5,820	EIA 2011
Small Retail	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	24.76	15	\$2.18	100%	at stock turnover	\$0.01	0	6	EIA 2011
Small Retail	Interior Lighting	Lodging - Guest Room Controls	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	0%	0%	\$10.00	0	0	BEST Simulation
Small Retail	Interior Lighting	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	113.78	6	\$2.42	100%	at stock turnover	\$0.00	0	12	EIA 2011
Small Retail	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	92.60	15	\$44.11	100%	at stock turnover	\$0.03	1,546	1,623	EIA 2011
Small Retail	Interior Lighting	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	366.85	3	\$3,175.00	0%	3%	\$0.23	9	14	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	86.19	7	\$932.00	1%	8%	\$0.37	7	8	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	Existing	1.26	7	\$20.00	1%	3%	\$3.04	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	Existing	61.64	10	\$130.00	1%	3%	\$0.31	2	2	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	Existing	0.00	13	\$0.00	22%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	Existing	269.29	15	\$1,395.00	15%	75%	\$0.62	37	37	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	Existing	156.87	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	Existing	28.15	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	290.55	3	\$3,175.00	0%	3%	\$0.20	13	13	BEST Simulation
Small Retail	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	99.46	7	\$932.00	1%	4%	\$0.36	1	1	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Miscellaneous	ENERGY STAR Battery Chargers	per 10,000 sqft Small Retail bldg.	New	1.46	7	\$1.00	1%	3%	\$0.13	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Small Retail	Miscellaneous	ENERGY STAR Water Cooler	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Small Retail	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 10,000 sqft Small Retail bldg.	New	0.00	13	\$0.00	26%	at stock turnover	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 10,000 sqft Small Retail bldg.	New	269.29	15	\$1,395.00	15%	75%	\$0.62	13	13	AEG research & analysis
Small Retail	Miscellaneous	Pool Heater - Heat Pump	per 10,000 sqft Small Retail bldg.	New	156.87	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Pool Pump - High Efficiency	per 10,000 sqft Small Retail bldg.	New	28.15	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Small Retail	Miscellaneous	Pool Pump - Timer	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$40.00	15%	75%	\$10.00	0	0	AEG research & analysis
Small Retail	Miscellaneous	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	283.81	3	\$3,175.00	0%	3%	\$0.23	5	5	BEST Simulation
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$100,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	279.32	6	\$2.10	100%	at stock turnover	\$0.00	99	105	ENERGY STAR Calculator

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Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	Existing	28.94	4	\$265.00	10%	50%	\$2.48	81	89	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	54.99	6	\$1.36	100%	at stock turnover	\$0.01	20	21	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	48.58	6	\$3.28	100%	at stock turnover	\$0.01	7	7	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	85.89	5	\$400.00	10%	25%	\$1.07	92	99	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	113.63	6	\$0.85	100%	at stock turnover	\$0.00	74	78	Assumed same as Desktop
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	60.67	6	\$0.78	100%	at stock turnover	\$0.00	5	5	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	Existing	407.67	6	\$3.06	100%	at stock turnover	\$0.00	379	390	Assumed same as Desktop
Small Retail	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$30,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Data Center - Server Virtualization	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$7,000.00	0%	0%	\$10.00	0	0	E3T Website
Small Retail	Office Equipment	Desktop Computer - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	279.32	6	\$2.10	100%	at stock turnover	\$0.00	39	39	ENERGY STAR Calculator
Small Retail	Office Equipment	Electronics - Smart Power Strips	per 10,000 sqft Small Retail bldg.	New	31.43	4	\$265.00	10%	50%	\$2.25	25	27	Developed from RTF
Small Retail	Office Equipment	Laptop - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	54.99	6	\$1.36	100%	at stock turnover	\$0.01	8	8	ENERGY STAR Calculator
Small Retail	Office Equipment	Monitor - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	48.58	6	\$3.28	100%	at stock turnover	\$0.01	3	3	ENERGY STAR Calculator
Small Retail	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	94.11	5	\$400.00	10%	25%	\$0.97	29	30	5th Plan
Small Retail	Office Equipment	POS Terminal - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	113.63	6	\$0.85	100%	at stock turnover	\$0.00	28	29	Assumed same as Desktop

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	60.67	6	\$0.78	100%	at stock turnover	\$0.00	2	2	ENERGY STAR Calculator
Small Retail	Office Equipment	Server - ENERGY STAR	per 10,000 sqft Small Retail bldg.	New	407.67	6	\$3.06	100%	at stock turnover	\$0.00	130	130	Assumed same as Desktop
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,754.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	Existing	238.12	9	\$1.37	5%	at stock turnover	\$0.00	3	3	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	Existing	414.09	8	\$1,695.00	0%	25%	\$0.71	2	2	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	Existing	821.33	9	\$71.00	0%	25%	\$0.01	29	29	PacifiCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	Existing	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	Existing	52.91	15	\$4,065.00	0%	25%	\$7.88	3	4	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	Existing	108.79	15	\$3,591.00	0%	25%	\$3.45	7	8	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	Existing	0.00	4	\$1,070.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	Existing	549.26	10	\$8.12	5%	at stock turnover	\$0.00	21	19	EIA 2011
Small Retail	Refrigeration	Grocery - Display Case - LED Lighting	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,031.00	0%	0%	\$10.00	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Refrigeration	Grocery - Display Case Motion Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	8	\$131.00	0%	0%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$1,688.00	0%	0%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 10,000 sqft Small Retail bldg.	New	238.12	9	\$2.05	8%	at stock turnover	\$0.00	2	2	EIA 2011
Small Retail	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 10,000 sqft Small Retail bldg.	New	477.80	8	\$1,695.00	0%	25%	\$0.62	1	1	Developed from RTF
Small Retail	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 10,000 sqft Small Retail bldg.	New	821.33	9	\$71.00	0%	25%	\$0.01	13	13	PacificCorp Program Data
Small Retail	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,538.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Evaporator Fan Controls	per 10,000 sqft Small Retail bldg.	New	0.00	16	\$108.00	0%	25%	\$10.00	0	0	DEER
Small Retail	Refrigeration	Refrigeration - Floating Head Pressure	per 10,000 sqft Small Retail bldg.	New	51.54	15	\$4,065.00	0%	25%	\$8.21	2	2	Developed from RTF
Small Retail	Refrigeration	Refrigeration - High Efficiency Compressor	per 10,000 sqft Small Retail bldg.	New	105.90	15	\$3,591.00	0%	25%	\$3.60	3	3	AEO 2013
Small Retail	Refrigeration	Refrigeration - Strip Curtain	per 10,000 sqft Small Retail bldg.	New	0.00	4	\$1,070.00	0%	25%	\$10.00	0	0	Developed from RTF
Small Retail	Refrigeration	Vending Machine - 1,820 kWh/yr	per 10,000 sqft Small Retail bldg.	New	549.26	10	\$12.18	8%	at stock turnover	\$0.01	13	12	EIA 2011
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	Existing	0.00	3	\$9,600.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$7,800.00	45%	50%	\$0.00	0	0	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	Existing	0.00	10	\$1,500.00	15%	35%	\$0.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	Existing	492.03	15	\$3,175.00	20%	65%	\$0.06	195	230	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	Existing	97.01	18	\$18.00	15%	50%	\$0.05	30	39	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	Existing	561.95	50	\$25,000.00	15%	25%	\$0.89	47	65	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	Existing	562.32	45	\$12,627.00	15%	35%	\$0.07	98	117	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	Existing	-12.63	20	\$82.00	15%	50%	\$0.04	-4	-5	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	Existing	310.17	20	\$3,500.00	15%	50%	\$0.09	94	113	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	Existing	91.27	45	\$7,710.00	15%	35%	\$0.07	16	19	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	Existing	571.21	3	\$6,100.00	10%	75%	\$0.31	316	386	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	Existing	412.65	3	\$3,175.00	0%	3%	\$0.20	11	15	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	Existing	0.00	5	\$111.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	Existing	148.36	15	\$2,200.00	15%	25%	\$1.60	12	15	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	Existing	1,408.54	18	\$1,700.00	15%	35%	\$0.12	243	293	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	Existing	4,755.97	20	\$4,563.16	100%	at stock turnover	\$0.10	761	770	BEST Simulation

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Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	Existing	4,023.58	15	\$710.00	13%	25%	\$0.02	422	488	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$8,244.00	48%	48%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,850.32	20	\$40,000.00	10%	25%	\$0.12	83	85	AEG research & analysis
Small Retail	Ventilation	Commissioning	per 10,000 sqft Small Retail bldg.	New	378.94	3	\$9,600.00	10%	75%	\$0.54	73	75	6th Plan
Small Retail	Ventilation	Cool Roofs - Absorbptivity 0.2	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$7,800.00	45%	50%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Doors - High Efficiency - R-5	per 10,000 sqft Small Retail bldg.	New	0.00	10	\$1,500.00	15%	50%	\$0.00	0	0	AEG research & analysis
Small Retail	Ventilation	Energy Management System	per 10,000 sqft Small Retail bldg.	New	337.41	15	\$3,175.00	20%	65%	\$0.07	45	47	BEST Simulation
Small Retail	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 10,000 sqft Small Retail bldg.	New	65.83	18	\$17.00	15%	50%	\$0.00	7	7	BEST Simulation
Small Retail	Ventilation	HVAC - Occupancy Sensors	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$173.00	15%	75%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 10,000 sqft Small Retail bldg.	New	369.71	50	\$25,000.00	15%	25%	\$1.13	11	11	6th Plan
Small Retail	Ventilation	Insulation - Ceiling - R-38	per 10,000 sqft Small Retail bldg.	New	2.82	45	\$12,627.00	15%	50%	\$0.09	0	0	BEST Simulation
Small Retail	Ventilation	Insulation - Ducting - R-8	per 10,000 sqft Small Retail bldg.	New	71.51	20	\$82.00	15%	50%	\$0.01	7	8	BEST Simulation
Small Retail	Ventilation	Insulation - Radiant Barrier - R-5	per 10,000 sqft Small Retail bldg.	New	212.93	20	\$3,500.00	15%	50%	\$0.10	22	23	BEST Simulation
Small Retail	Ventilation	Insulation - Wall Cavity - R-23	per 10,000 sqft Small Retail bldg.	New	12.70	45	\$7,710.00	15%	50%	\$0.59	1	1	BEST Simulation
Small Retail	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Ventilation	Retrocommissioning	per 10,000 sqft Small Retail bldg.	New	0.00	3	\$6,100.00	0%	0%	\$10.00	0	0	6th Plan
Small Retail	Ventilation	Strategic Energy Management	per 10,000 sqft Small Retail bldg.	New	273.75	3	\$3,175.00	0%	3%	\$0.23	3	3	BEST Simulation
Small Retail	Ventilation	Thermostat - Clock/Programmable	per 10,000 sqft Small Retail bldg.	New	0.00	5	\$299.00	10%	10%	\$10.00	0	0	BEST Simulation
Small Retail	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 10,000 sqft Small Retail bldg.	New	97.61	15	\$1,300.00	15%	25%	\$1.36	3	3	6th Plan
Small Retail	Ventilation	Ventilation - ECM on VAV Boxes	per 10,000 sqft Small Retail bldg.	New	939.90	18	\$1,700.00	15%	35%	\$0.18	56	58	DEER
Small Retail	Ventilation	Ventilation - Variable Air Volume	per 10,000 sqft Small Retail bldg.	New	4,481.78	20	\$4,262.17	100%	at stock turnover	\$0.10	241	245	BEST Simulation
Small Retail	Ventilation	Ventilation - Variable Speed Control	per 10,000 sqft Small Retail bldg.	New	2,736.64	15	\$710.00	19%	25%	\$0.03	45	47	BEST Simulation
Small Retail	Ventilation	Windows - High Efficiency - U-0.35 Window	per 10,000 sqft Small Retail bldg.	New	0.00	20	\$8,244.00	66%	66%	\$10.00	0	0	BEST Simulation
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	Existing	0.00	20	\$40,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	616.74	5	\$1,800.00	3%	75%	\$0.53	145	236	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	Existing	304.59	7	\$932.00	1%	8%	\$0.37	7	11	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	Existing	3,755.79	20	\$745.00	1%	5%	\$0.02	60	91	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	658.11	5	\$400.00	1%	10%	\$0.12	20	32	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	Existing	1,697.34	5	\$221.00	25%	65%	\$0.03	86	363	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis

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Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	Existing	0.00	15	\$103.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	Existing	16.88	15	\$3.00	15%	75%	\$0.02	3	5	DEER
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	Existing	411.36	15	\$1,141.00	16%	75%	\$0.26	81	127	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	Existing	1,421.84	20	\$8,333.00	1%	30%	\$0.47	136	216	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	Existing	5,791.62	14	\$911.14	44%	at stock turnover	\$0.02	1,839	1,772	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	Existing	591.94	5	\$1,800.00	3%	75%	\$0.53	137	230	AEG study for PN&L
Small Retail	Water Heating	Advanced New Construction Designs	per 10,000 sqft Small Retail bldg.	New	1,890.02	20	\$40,000.00	10%	25%	\$0.12	27	39	AEG research & analysis
Small Retail	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	556.46	5	\$1,800.00	6%	75%	\$0.53	36	53	AEG study for PN&L
Small Retail	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 10,000 sqft Small Retail bldg.	New	275.45	7	\$932.00	1%	4%	\$0.36	1	1	Developed from RTF
Small Retail	Water Heating	Water Heater - Desuperheater	per 10,000 sqft Small Retail bldg.	New	3,579.23	20	\$745.00	1%	7%	\$0.02	21	31	Developed from RTF (Residential)
Small Retail	Water Heating	Water Heater - Drainwater Heat Recovery	per 10,000 sqft Small Retail bldg.	New	633.51	5	\$400.00	0%	75%	\$0.12	45	66	AEG study for LA Dept of Water & Power
Small Retail	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 10,000 sqft Small Retail bldg.	New	1,612.88	5	\$221.00	25%	65%	\$0.03	23	90	DEER
Small Retail	Water Heating	Water Heater - Faucet Motion Sensor Control	per 10,000 sqft Small Retail bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Small Retail	Water Heating	Water Heater - High Efficiency Circulation Pump	per 10,000 sqft Small Retail bldg.	New	0.00	15	\$103.00	0%	0%	\$10.00	0	0	Hawaii TRM
Small Retail	Water Heating	Water Heater - Install Timer	per 10,000 sqft Small Retail bldg.	New	16.40	15	\$3.00	15%	75%	\$0.02	1	1	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Small Retail	Water Heating	Water Heater - Pipe Insulation	per 10,000 sqft Small Retail bldg.	New	372.55	15	\$1,141.00	1%	75%	\$0.26	26	38	BEST Simulation
Small Retail	Water Heating	Water Heater - Solar System	per 10,000 sqft Small Retail bldg.	New	1,281.47	20	\$8,333.00	1%	30%	\$0.47	35	51	BEST Simulation
Small Retail	Water Heating	Water Heating - EF 2.35	per 10,000 sqft Small Retail bldg.	New	5,791.62	14	\$911.14	44%	at stock turnover	\$0.02	812	786	BEST Simulation
Small Retail	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 10,000 sqft Small Retail bldg.	New	535.53	5	\$1,800.00	6%	75%	\$0.53	35	51	AEG study for PN&L
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	Existing	11,034.79	23	\$14,855.92	2%	at stock turnover	\$0.87	22	22	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	Existing	37,292.00	23	\$12,450.22	3%	at stock turnover	\$0.03	100	101	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	21,558.75	10	\$810.00	15%	75%	\$0.01	57	63	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	4,899.28	15	\$860.00	15%	75%	\$0.02	13	14	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	Existing	753.84	15	\$2,560.00	15%	75%	\$0.30	2	2	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan

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Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	Existing	27,657.75	12	\$45,000.00	15%	75%	\$0.19	361	442	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	5,233.16	10	\$15,000.00	15%	35%	\$0.05	23	26	AEG research & analysis
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	48,442.62	15	\$3,570.00	15%	25%	\$0.00	10	11	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	8,807.55	15	\$31,750.00	20%	65%	\$0.05	90	98	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	Existing	15,922.18	15	\$2,145.37	0%	at stock turnover	\$0.02	3	3	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	Existing	57,407.17	23	\$137,713.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	1,938.27	18	\$70.00	15%	25%	\$0.00	4	5	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	Existing	33,480.30	10	\$21,030.00	18%	75%	\$0.09	152	381	DEER

Measure Data and Assumptions

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Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	8,976.28	50	\$250,000.00	15%	25%	\$1.68	19	25	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	18,080.78	45	\$126,270.00	15%	35%	\$0.04	83	89	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	5,525.60	20	\$820.00	15%	35%	\$0.01	25	27	BEST Simulation
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	8,192.03	45	\$69,280.00	15%	35%	\$0.08	36	40	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	5,567.61	20	\$35,000.00	15%	50%	\$0.07	44	48	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	-5,920.95	45	\$77,100.00	15%	35%	\$0.04	-27	-29	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	Existing	28,167.85	15	\$19,041.10	1%	at stock turnover	\$0.08	56	52	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	9,128.49	3	\$61,000.00	10%	75%	\$0.25	126	147	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	Existing	51,016.40	23	\$72,434.73	9%	at stock turnover	\$0.15	93	94	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$92,470.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	7,064.17	3	\$31,750.00	3%	11%	\$0.17	12	16	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	Existing	59,512.38	23	\$18,752.62	0%	at stock turnover	\$0.03	18	18	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	17,227.45	10	\$810.00	15%	75%	\$0.01	5	6	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	Existing	23,877.87	4	\$810.00	15%	75%	\$0.01	7	8	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	Existing	6,553.68	15	\$860.00	15%	75%	\$0.01	2	2	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	Existing	707.30	15	\$3,960.00	15%	75%	\$0.46	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	40,128.77	20	\$400,000.00	10%	15%	\$0.10	21	22	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	New	10,825.17	23	\$12,756.38	3%	at stock turnover	\$0.79	19	19	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse bldg.	New	33,664.44	23	\$11,126.49	3%	at stock turnover	\$0.03	79	81	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	22,649.13	10	\$810.00	15%	75%	\$0.00	27	28	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	4,560.33	15	\$860.00	15%	75%	\$0.02	5	6	BEST Simulation
Warehouse	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$2,560.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Commissioning	per 100,000 sqft Warehouse bldg.	New	7,572.96	3	\$96,000.00	10%	75%	\$0.41	52	53	6th Plan
Warehouse	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse bldg.	New	22,881.07	12	\$45,000.00	15%	75%	\$0.22	146	149	Environment Design Guide, November 2007 (PDF)
Warehouse	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	4,404.80	10	\$15,000.00	15%	50%	\$0.05	16	17	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	39,494.19	15	\$3,570.00	15%	25%	\$0.00	4	4	Developed from RTF
Warehouse	Cooling	Energy Management System	per 100,000 sqft Warehouse bldg.	New	7,444.38	15	\$31,750.00	20%	65%	\$0.05	36	37	BEST Simulation
Warehouse	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse bldg.	New	15,922.18	15	\$2,359.91	0%	at stock turnover	\$0.02	2	2	PacifiCorp Program Data
Warehouse	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	New	43,644.92	23	\$103,200.70	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	2,589.62	18	\$60.00	15%	25%	\$0.00	3	3	BEST Simulation
Warehouse	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse bldg.	New	26,905.30	10	\$21,030.00	18%	75%	\$0.10	22	126	DEER
Warehouse	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	7,393.03	50	\$250,000.00	15%	25%	\$2.05	8	8	6th Plan
Warehouse	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	1,775.34	45	\$126,270.00	15%	50%	\$0.05	7	7	BEST Simulation
Warehouse	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	5,945.56	20	\$820.00	15%	25%	\$0.01	6	6	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	7,243.73	45	\$69,280.00	15%	50%	\$0.09	27	28	BPA
Warehouse	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	4,668.12	20	\$35,000.00	15%	50%	\$0.07	17	18	BEST Simulation
Warehouse	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	-90.74	45	\$77,100.00	15%	50%	\$0.32	0	0	BEST Simulation
Warehouse	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse bldg.	New	24,761.09	15	\$18,077.69	2%	at stock turnover	\$0.08	31	28	BEST Simulation
Warehouse	Cooling	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse bldg.	New	50,035.37	23	\$62,197.75	10%	at stock turnover	\$0.13	80	81	BEST Simulation
Warehouse	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$92,470.00	15%	75%	\$10.00	0	0	DEER
Warehouse	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	5,844.18	3	\$31,750.00	3%	11%	\$0.18	7	7	BEST Simulation
Warehouse	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse bldg.	New	54,261.16	23	\$16,758.81	0%	at stock turnover	\$0.03	14	14	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	13,302.40	10	\$810.00	15%	75%	\$0.01	2	2	DEER
Warehouse	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse bldg.	New	18,701.86	4	\$810.00	15%	75%	\$0.01	2	3	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse bldg.	New	5,270.44	15	\$860.00	15%	75%	\$0.01	1	1	BEST Simulation
Warehouse	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$3,960.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	485.06	15	\$31,750.00	20%	65%	\$0.05	60	98	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	1,337.23	5	\$1,970.00	15%	25%	\$0.24	35	77	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	546.90	10	\$6,520.00	33%	60%	\$1.15	38	87	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	Existing	7,695.11	10	\$10,210.00	15%	30%	\$0.14	312	651	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	790.40	15	-\$40.69	100%	at stock turnover	-\$0.02	3	5	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,007.75	15	\$322.37	100%	at stock turnover	\$0.01	997	922	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	70.32	15	\$12.94	100%	at stock turnover	\$0.03	863	847	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.90	15	\$1.93	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	441.87	3	\$61,000.00	10%	75%	\$0.25	75	129	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	129.99	6	\$3.60	100%	at stock turnover	\$0.01	0	4	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	105.79	15	\$65.51	100%	at stock turnover	\$0.04	1,170	1,337	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	387.06	3	\$31,750.00	3%	11%	\$0.17	8	22	BEST Simulation
Warehouse	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	2,288.15	20	\$400,000.00	10%	15%	\$0.10	14	21	AEG research & analysis
Warehouse	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	371.58	3	\$96,000.00	10%	75%	\$0.41	28	45	6th Plan
Warehouse	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	414.21	15	\$31,750.00	20%	65%	\$0.05	22	35	BEST Simulation
Warehouse	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	1,124.80	5	\$1,970.00	15%	25%	\$0.27	13	21	Illinois TRM
Warehouse	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	476.45	10	\$6,520.00	44%	60%	\$1.23	9	14	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse bldg.	New	6,482.56	10	\$10,210.00	15%	30%	\$0.16	115	182	AEG research & analysis
Warehouse	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	790.40	15	-\$40.69	100%	at stock turnover	-\$0.02	3	4	EIA 2011
Warehouse	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,007.75	15	\$322.37	100%	at stock turnover	\$0.01	563	524	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	70.32	15	\$12.94	100%	at stock turnover	\$0.03	485	484	EIA 2011
Warehouse	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.90	15	\$1.93	100%	at stock turnover	\$0.01	0	1	EIA 2011
Warehouse	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	129.99	6	\$3.60	100%	at stock turnover	\$0.01	0	5	EIA 2011
Warehouse	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	105.79	15	\$65.51	100%	at stock turnover	\$0.04	677	709	EIA 2011
Warehouse	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	325.58	3	\$31,750.00	3%	11%	\$0.18	4	6	BEST Simulation
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	7,624.92	15	\$4.42	2%	at stock turnover	\$0.00	6	6	Illinois TRM
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	777.11	10	\$4.70	2%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,317.43	18	\$19.94	2%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,399.15	10	\$10.58	2%	at stock turnover	\$0.00	3	2	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	7,624.92	15	\$5.31	3%	at stock turnover	\$0.00	5	5	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	777.11	10	\$5.17	2%	at stock turnover	\$0.00	1	1	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,317.43	18	\$21.94	2%	at stock turnover	\$0.00	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,399.15	10	\$12.69	3%	at stock turnover	\$0.00	2	2	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	Existing	6,836.59	23	\$149,074.30	2%	at stock turnover	\$0.87	14	14	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	35,578.88	10	\$15,000.00	15%	35%	\$0.05	130	136	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	482,453.72	15	\$3,570.00	15%	25%	\$0.00	637	637	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	59,891.09	15	\$31,750.00	20%	65%	\$0.05	497	516	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	Existing	7,406.56	23	\$121,040.16	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	4,477.58	18	\$70.00	15%	25%	\$0.00	9	9	BEST Simulation
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	243,880.91	45	\$126,270.00	15%	35%	\$0.04	915	933	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	4,689.59	20	\$820.00	15%	35%	\$0.01	18	18	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	Existing	58,788.22	45	\$69,280.00	15%	35%	\$0.08	213	225	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	46,130.80	20	\$35,000.00	15%	50%	\$0.07	294	309	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	181,187.97	45	\$77,100.00	15%	35%	\$0.04	688	693	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	70,041.48	3	\$61,000.00	10%	75%	\$0.25	821	871	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	Existing	0.00	14	\$75,770.00	3%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	50,687.88	3	\$31,750.00	3%	11%	\$0.17	73	82	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	302,955.37	20	\$400,000.00	10%	15%	\$0.10	116	116	AEG research & analysis
Warehouse	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse bldg.	New	8,820.42	23	\$148,629.74	2%	at stock turnover	\$0.79	14	14	BEST Simulation
Warehouse	Heating	Commissioning	per 100,000 sqft Warehouse bldg.	New	63,936.24	3	\$96,000.00	10%	75%	\$0.41	318	318	6th Plan
Warehouse	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	33,305.08	10	\$15,000.00	15%	50%	\$0.05	89	89	AEG research & analysis
Warehouse	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse bldg.	New	482,566.86	15	\$3,570.00	15%	25%	\$0.00	256	256	Developed from RTF
Warehouse	Heating	Energy Management System	per 100,000 sqft Warehouse bldg.	New	56,287.95	15	\$31,750.00	20%	65%	\$0.05	194	194	BEST Simulation
Warehouse	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse bldg.	New	25,232.35	23	\$90,705.76	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	-93.83	18	\$60.00	15%	25%	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	235,313.77	45	\$126,270.00	15%	50%	\$0.05	633	634	BEST Simulation
Warehouse	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	461.23	20	\$820.00	15%	25%	\$0.01	0	0	BEST Simulation
Warehouse	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse bldg.	New	54,687.24	45	\$69,280.00	15%	50%	\$0.09	147	147	BPA
Warehouse	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	43,017.03	20	\$35,000.00	15%	50%	\$0.07	115	115	BEST Simulation
Warehouse	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	19,034.70	45	\$77,100.00	15%	50%	\$0.32	51	51	BEST Simulation
Warehouse	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Heating	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse bldg.	New	0.00	14	\$75,770.00	6%	75%	\$10.00	0	0	DEER
Warehouse	Heating	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	46,447.10	3	\$31,750.00	3%	11%	\$0.18	37	37	BEST Simulation
Warehouse	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	2,916.22	15	\$31,750.00	20%	65%	\$0.05	383	591	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,653.92	15	-\$85.15	100%	at stock turnover	-\$0.02	30	42	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	2,108.72	15	\$674.57	100%	at stock turnover	\$0.01	8,587	7,945	EIA 2011
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	Existing	8,760.29	5	\$41,300.00	5%	15%	\$0.76	76	166	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	Existing	13,851.88	5	\$8,780.00	15%	50%	\$0.12	460	877	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	Existing	15,808.74	12	\$40,000.00	3%	25%	\$0.24	955	1,913	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	Existing	2,372.87	16	\$5,530.00	1%	3%	\$0.19	13	29	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	17,048.99	10	\$22,890.00	7%	45%	\$0.15	1,293	3,580	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Interior Lighting - Timedlocks and Timers	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$24,110.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	Existing	1,027.28	5	\$11,000.00	10%	25%	\$1.37	10	33	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	100.40	15	\$18.48	100%	at stock turnover	\$0.03	6,683	6,560	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	24.12	15	\$2.76	100%	at stock turnover	\$0.01	0	7	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	2,532.80	3	\$61,000.00	10%	75%	\$0.25	450	742	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	222.56	6	\$6.16	100%	at stock turnover	\$0.01	0	6	EIA 2011
Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	181.14	15	\$112.17	100%	at stock turnover	\$0.04	1,445	1,652	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	2,289.48	3	\$31,750.00	3%	11%	\$0.17	51	117	BEST Simulation
Warehouse	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	14,255.62	20	\$400,000.00	10%	15%	\$0.10	88	133	AEG research & analysis
Warehouse	Interior Lighting	Commissioning	per 100,000 sqft Warehouse bldg.	New	2,283.68	3	\$96,000.00	10%	75%	\$0.41	181	276	6th Plan
Warehouse	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse bldg.	New	2,580.85	15	\$31,750.00	20%	65%	\$0.05	143	218	BEST Simulation
Warehouse	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,653.92	15	-\$85.15	100%	at stock turnover	-\$0.02	27	39	EIA 2011
Warehouse	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	2,108.72	15	\$674.57	100%	at stock turnover	\$0.01	4,850	4,518	EIA 2011

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse bldg.	New	7,937.79	5	\$41,300.00	5%	15%	\$0.83	31	49	Illinois TRM
Warehouse	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse bldg.	New	12,246.75	5	\$8,780.00	15%	50%	\$0.13	170	269	Illinois TRM
Warehouse	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse bldg.	New	14,229.45	12	\$40,000.00	4%	25%	\$0.26	357	543	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse bldg.	New	2,135.58	16	\$5,530.00	1%	3%	\$0.20	5	8	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	14,884.31	10	\$22,890.00	22%	45%	\$0.16	193	627	Ameren Missouri TRM
Warehouse	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$24,110.00	7%	15%	\$10.00	0	0	DEER
Warehouse	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse bldg.	New	774.62	5	\$11,000.00	10%	25%	\$1.70	4	7	AEG research & analysis
Warehouse	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	100.40	15	\$18.48	100%	at stock turnover	\$0.03	3,758	3,748	EIA 2011
Warehouse	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	24.12	15	\$2.76	100%	at stock turnover	\$0.01	0	5	EIA 2011
Warehouse	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	222.56	6	\$6.16	100%	at stock turnover	\$0.01	0	6	EIA 2011

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Warehouse	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	181.14	15	\$112.17	100%	at stock turnover	\$0.04	836	876	EIA 2011
Warehouse	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	2,060.54	3	\$31,750.00	3%	11%	\$0.18	26	40	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	279.48	7	\$1,400.00	1%	4%	\$0.47	2	2	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	Existing	4.09	7	\$30.00	1%	3%	\$1.40	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	Existing	200.43	10	\$190.00	1%	3%	\$0.14	1	1	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calc/CalculatorBulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	Existing	0.00	13	\$0.00	50%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	Existing	1,738.73	15	\$4,110.00	15%	75%	\$0.28	78	78	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	Existing	1,568.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	Existing	281.48	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	1,545.15	3	\$31,750.00	3%	11%	\$0.17	32	31	BEST Simulation
Warehouse	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	327.93	7	\$1,400.00	1%	2%	\$0.43	0	0	Developed from RTF
Warehouse	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/CalculatorBulkPurchasingWaterCooler.xls
Warehouse	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse bldg.	New	0.00	13	\$0.00	60%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse bldg.	New	1,738.73	15	\$4,110.00	15%	75%	\$0.28	38	38	AEG research & analysis
Warehouse	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse bldg.	New	1,568.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse bldg.	New	281.48	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	1,484.89	3	\$31,750.00	3%	11%	\$0.18	17	17	BEST Simulation
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	2,807.33	6	\$21.06	100%	at stock turnover	\$0.00	144	152	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	Existing	979.97	4	\$2,650.00	10%	50%	\$0.71	368	415	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	442.16	6	\$10.96	100%	at stock turnover	\$0.01	23	24	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	488.30	6	\$33.02	100%	at stock turnover	\$0.01	10	11	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	3,013.53	5	\$4,000.00	10%	25%	\$0.30	445	480	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	1,142.00	6	\$6.60	77%	at stock turnover	\$0.00	83	88	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	609.72	6	\$7.80	100%	at stock turnover	\$0.00	7	7	ENERGY STAR Calculator

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	Existing	4,097.31	6	\$27.36	89%	at stock turnover	\$0.00	514	529	Assumed same as Desktop
Warehouse	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	2,807.33	6	\$21.06	100%	at stock turnover	\$0.00	77	78	ENERGY STAR Calculator
Warehouse	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse bldg.	New	1,078.50	4	\$2,650.00	10%	50%	\$0.62	168	178	Developed from RTF
Warehouse	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	442.16	6	\$10.96	100%	at stock turnover	\$0.01	12	12	ENERGY STAR Calculator
Warehouse	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	488.30	6	\$33.02	100%	at stock turnover	\$0.01	5	5	ENERGY STAR Calculator
Warehouse	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	3,432.39	5	\$4,000.00	10%	25%	\$0.27	201	214	5th Plan
Warehouse	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	1,142.00	6	\$7.26	85%	at stock turnover	\$0.00	47	48	Assumed same as Desktop
Warehouse	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	609.72	6	\$7.80	100%	at stock turnover	\$0.00	3	3	ENERGY STAR Calculator
Warehouse	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse bldg.	New	4,097.31	6	\$30.74	100%	at stock turnover	\$0.00	258	257	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	Existing	3,447.94	9	\$39.17	10%	at stock turnover	\$0.00	52	47	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	Existing	1,232.00	9	\$110.00	0%	10%	\$0.01	0	0	PacifiCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	Existing	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$16,270.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$5,390.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	Existing	7,953.29	10	\$232.82	10%	at stock turnover	\$0.01	85	75	EIA 2011
Warehouse	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse bldg.	New	3,447.94	9	\$47.00	12%	at stock turnover	\$0.00	33	30	EIA 2011
Warehouse	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse bldg.	New	0.00	8	\$2,540.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse bldg.	New	1,232.00	9	\$110.00	0%	10%	\$0.01	0	0	PacificCorp Program Data
Warehouse	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$2,310.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse bldg.	New	0.00	16	\$160.00	0%	0%	\$10.00	0	0	DEER
Warehouse	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$16,270.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$5,390.00	0%	0%	\$10.00	0	0	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse bldg.	New	7,953.29	10	\$279.39	12%	at stock turnover	\$0.01	66	62	EIA 2011
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	Existing	1,062.99	15	\$31,750.00	20%	65%	\$0.05	55	72	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	Existing	581.36	18	\$70.00	15%	25%	\$0.00	7	10	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	Existing	1,220.57	50	\$250,000.00	15%	25%	\$1.68	13	21	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	Existing	3,360.32	45	\$126,270.00	15%	35%	\$0.04	78	101	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	Existing	-12.82	20	\$820.00	15%	35%	\$0.01	0	0	BEST Simulation
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	Existing	674.10	20	\$35,000.00	15%	50%	\$0.07	27	35	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	Existing	202.76	45	\$77,100.00	15%	35%	\$0.04	5	6	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	Existing	1,254.76	3	\$61,000.00	10%	75%	\$0.25	92	123	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	Existing	908.02	3	\$31,750.00	3%	11%	\$0.17	8	14	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	Existing	322.26	15	\$22,000.00	15%	75%	\$6.92	21	29	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	Existing	3,005.23	18	\$17,000.00	15%	35%	\$0.53	66	90	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	Existing	13,965.84	20	\$12,632.00	100%	at stock turnover	\$0.09	296	299	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	Existing	9,181.10	15	\$2,890.00	13%	50%	\$0.04	419	506	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	3,646.97	20	\$400,000.00	10%	15%	\$0.10	11	11	AEG research & analysis
Warehouse	Ventilation	Commissioning	per 100,000 sqft Warehouse bldg.	New	772.30	3	\$96,000.00	10%	75%	\$0.41	29	30	6th Plan
Warehouse	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse	Ventilation	Energy Management System	per 100,000 sqft Warehouse bldg.	New	719.02	15	\$31,750.00	20%	65%	\$0.05	19	20	BEST Simulation
Warehouse	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse bldg.	New	510.26	18	\$60.00	15%	25%	\$0.00	3	3	BEST Simulation
Warehouse	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse bldg.	New	740.41	50	\$250,000.00	15%	25%	\$2.05	4	4	6th Plan
Warehouse	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse bldg.	New	726.57	45	\$126,270.00	15%	50%	\$0.05	15	15	BEST Simulation
Warehouse	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse bldg.	New	150.46	20	\$820.00	15%	25%	\$0.01	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse bldg.	New	419.68	20	\$35,000.00	15%	50%	\$0.07	9	9	BEST Simulation
Warehouse	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse bldg.	New	26.53	45	\$77,100.00	15%	50%	\$0.32	1	1	BEST Simulation
Warehouse	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse bldg.	New	559.14	3	\$31,750.00	3%	11%	\$0.18	3	4	BEST Simulation
Warehouse	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse bldg.	New	195.49	15	\$13,000.00	15%	75%	\$6.46	7	7	6th Plan
Warehouse	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse bldg.	New	1,834.40	18	\$17,000.00	15%	35%	\$0.84	21	22	DEER
Warehouse	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse bldg.	New	12,006.57	20	\$11,564.60	100%	at stock turnover	\$0.10	83	85	BEST Simulation
Warehouse	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse bldg.	New	5,672.43	15	\$2,890.00	19%	50%	\$0.06	102	105	BEST Simulation
Warehouse	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,331.18	5	\$18,000.00	3%	75%	\$1.62	156	168	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	Existing	250.49	7	\$1,400.00	1%	4%	\$0.47	1	1	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,344.19	5	\$4,000.00	1%	10%	\$0.36	20	21	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	Existing	6,508.32	5	\$1,320.00	25%	65%	\$0.05	93	252	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	Existing	840.07	15	\$1,160.00	15%	75%	\$0.15	48	49	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	Existing	97.58	15	\$30.00	15%	75%	\$0.04	6	6	DEER
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	Existing	1,507.33	15	\$4,420.00	16%	75%	\$0.31	83	88	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	Existing	5,534.53	20	\$12,500.00	1%	30%	\$0.22	151	157	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	Existing	541.83	13	\$25.41	64%	at stock turnover	\$0.01	36	34	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	Existing	2,233.27	5	\$18,000.00	3%	75%	\$1.62	147	163	AEG study for PN&L
Warehouse	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse bldg.	New	7,929.11	20	\$400,000.00	10%	15%	\$0.10	15	15	AEG research & analysis
Warehouse	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,164.72	5	\$18,000.00	6%	75%	\$1.63	57	57	AEG study for PN&L
Warehouse	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse bldg.	New	242.91	7	\$1,400.00	1%	2%	\$0.43	0	0	Developed from RTF
Warehouse	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,347.78	5	\$4,000.00	0%	75%	\$0.36	67	68	AEG study for LA Dept of Water & Power
Warehouse	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse bldg.	New	6,492.96	5	\$1,320.00	25%	65%	\$0.05	37	101	DEER
Warehouse	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse bldg.	New	842.23	15	\$1,160.00	15%	75%	\$0.15	19	19	Hawaii TRM
Warehouse	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse bldg.	New	97.79	15	\$30.00	15%	75%	\$0.04	2	2	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse bldg.	New	1,515.41	15	\$4,420.00	1%	75%	\$0.31	43	43	BEST Simulation
Warehouse	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse bldg.	New	5,552.67	20	\$12,500.00	1%	30%	\$0.22	62	62	BEST Simulation
Warehouse	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse bldg.	New	541.83	13	\$25.41	64%	at stock turnover	\$0.01	22	21	BEST Simulation
Warehouse	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse bldg.	New	2,250.59	5	\$18,000.00	6%	75%	\$1.63	59	60	AEG study for PN&L
Warehouse - Refrigerated	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,291.07	23	\$11,162.11	2%	at stock turnover	\$0.87	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	28,019.62	23	\$9,354.57	13%	at stock turnover	\$0.03	3	3	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16,169.67	10	\$810.00	15%	75%	\$0.01	2	2	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,667.25	15	\$860.00	15%	75%	\$0.03	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	603.00	15	\$2,560.00	15%	75%	\$0.40	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)
Warehouse - Refrigerated	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,789.61	10	\$15,000.00	15%	35%	\$0.07	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	36,423.68	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse - Refrigerated	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,377.79	15	\$31,750.00	20%	65%	\$0.06	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	11,963.25	15	\$1,117.42	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	43,133.30	23	\$103,472.27	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,426.15	18	\$70.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	24,767.69	10	\$21,030.00	18%	75%	\$0.11	3	7	DEER
Warehouse - Refrigerated	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,854.84	50	\$250,000.00	15%	25%	\$1.73	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,092.34	45	\$126,270.00	15%	35%	\$0.05	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,023.76	20	\$820.00	15%	50%	\$0.01	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,853.37	45	\$69,280.00	15%	35%	\$0.11	0	1	BPA

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,031.84	20	\$35,000.00	15%	50%	\$0.08	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-4,287.42	45	\$77,100.00	15%	35%	\$0.05	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	21,164.12	15	\$14,306.67	1%	at stock turnover	\$0.08	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,975.07	3	\$61,000.00	10%	75%	\$0.00	2	0	6th Plan
Warehouse - Refrigerated	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	38,331.55	23	\$54,424.37	17%	at stock turnover	\$0.15	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$92,470.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,047.65	3	\$31,750.00	3%	11%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	44,715.06	23	\$14,089.92	1%	at stock turnover	\$0.03	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	12,921.24	10	\$810.00	15%	75%	\$0.01	0	3	DEER
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	17,873.96	4	\$810.00	15%	75%	\$0.01	0	12	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	4,906.02	15	\$860.00	15%	75%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	565.04	15	\$3,960.00	15%	75%	\$0.61	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	28,405.30	20	\$400,000.00	10%	15%	\$0.12	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,133.57	23	\$9,584.60	2%	at stock turnover	\$0.79	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per 100,000 sqft Warehouse - Refrigerated bldg.	New	25,294.02	23	\$8,359.97	14%	at stock turnover	\$0.03	2	2	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	16,979.72	10	\$810.00	15%	75%	\$0.01	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,398.06	15	\$860.00	15%	75%	\$0.02	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$2,560.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,641.90	3	\$96,000.00	10%	75%	\$0.53	1	1	6th Plan
Warehouse - Refrigerated	Cooling	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Data Center - Air Flow Optimization and Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$210,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Cooling	Destratification Fans (HVLS)	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	12	\$45,000.00	15%	15%	\$10.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,117.79	10	\$15,000.00	15%	50%	\$0.07	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	29,680.01	15	\$3,570.00	15%	25%	\$0.00	0	0	Developed from RTF
Warehouse - Refrigerated	Cooling	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,269.12	15	\$31,750.00	20%	65%	\$0.07	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Evaporative Cooling - Indirect/Direct	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,963.25	15	\$1,229.16	0%	at stock turnover	\$0.01	0	0	PacifiCorp Program Data
Warehouse - Refrigerated	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	New	32,792.93	23	\$77,540.61	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Chilled Water Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,878.54	18	\$60.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	HVAC - Economizer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	19,713.82	10	\$21,030.00	18%	75%	\$0.13	0	2	DEER
Warehouse - Refrigerated	Cooling	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,507.72	50	\$250,000.00	15%	25%	\$2.26	0	0	6th Plan
Warehouse - Refrigerated	Cooling	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,256.57	45	\$126,270.00	15%	50%	\$0.06	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,245.28	20	\$820.00	15%	50%	\$0.02	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,127.38	45	\$69,280.00	15%	50%	\$0.12	0	0	BPA
Warehouse - Refrigerated	Cooling	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,304.22	20	\$35,000.00	15%	50%	\$0.09	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-67.60	45	\$77,100.00	15%	50%	\$0.42	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	PTAC - EER 12.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	18,604.42	15	\$13,582.81	1%	at stock turnover	\$0.08	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	RTU - EER 12.0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	37,594.44	23	\$46,732.74	19%	at stock turnover	\$0.13	1	1	BEST Simulation
Warehouse - Refrigerated	Cooling	RTU - Evaporative Precooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$92,470.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Cooling	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,082.26	3	\$31,750.00	3%	11%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per 100,000 sqft Warehouse - Refrigerated bldg.	New	40,769.53	23	\$12,591.85	2%	at stock turnover	\$0.03	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,975.41	10	\$810.00	15%	75%	\$0.01	0	1	DEER
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	14,024.52	4	\$810.00	15%	75%	\$0.01	0	2	BEST Simulation
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,928.44	15	\$860.00	15%	75%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$3,960.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Cooling	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	486.53	15	\$31,750.00	20%	65%	\$0.06	1	1	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,324.13	5	\$6,340.00	15%	25%	\$0.78	0	1	Illinois TRM
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	560.36	10	\$6,670.00	33%	60%	\$1.17	0	1	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	7,717.71	10	\$10,440.00	15%	30%	\$0.15	3	6	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	Existing	932.07	15	-\$47.99	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	1,188.38	15	\$380.16	100%	at stock turnover	\$0.01	11	10	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	67.19	15	\$12.37	100%	at stock turnover	\$0.03	8	7	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	16.14	15	\$1.84	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	446.78	3	\$61,000.00	10%	75%	\$0.31	1	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	119.44	6	\$3.31	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	97.21	15	\$60.20	100%	at stock turnover	\$0.04	10	11	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	387.96	3	\$31,750.00	3%	11%	\$0.20	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,363.04	20	\$400,000.00	10%	15%	\$0.12	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	387.17	3	\$96,000.00	10%	75%	\$0.53	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	427.77	15	\$31,750.00	20%	65%	\$0.07	0	0	BEST Simulation
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,138.96	5	\$6,340.00	15%	25%	\$0.84	0	0	Illinois TRM
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	503.03	10	\$6,670.00	44%	60%	\$1.21	0	0	AEG research & analysis
Warehouse - Refrigerated	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	6,694.68	10	\$10,440.00	15%	30%	\$0.16	1	2	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Exterior Lighting	HID - High Output T5 (75.5 lm/W)	Lamp	New	932.07	15	-\$47.99	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	1,188.38	15	\$380.16	100%	at stock turnover	\$0.01	6	6	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	67.19	15	\$12.37	100%	at stock turnover	\$0.03	4	4	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	16.14	15	\$1.84	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Exterior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	119.44	6	\$3.31	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	97.21	15	\$60.20	100%	at stock turnover	\$0.04	6	6	EIA 2011
Warehouse - Refrigerated	Exterior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	336.20	3	\$31,750.00	3%	11%	\$0.22	0	0	BEST Simulation
Warehouse - Refrigerated	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	11,942.73	15	\$124.85	41%	at stock turnover	\$0.00	2	2	Illinois TRM
Warehouse - Refrigerated	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,217.16	10	\$132.61	41%	at stock turnover	\$0.02	1	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse - Refrigerated	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,063.46	18	\$562.75	41%	at stock turnover	\$0.03	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse - Refrigerated	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,191.46	10	\$298.47	41%	at stock turnover	\$0.02	1	1	Developed from RTF "ComCookingConvectionOven" v2.0

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Food Preparation	Dishwasher - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,942.73	15	\$149.81	49%	at stock turnover	\$0.00	1	1	Illinois TRM
Warehouse - Refrigerated	Food Preparation	Fryer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,217.16	10	\$145.87	45%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionFryer" v2.0
Warehouse - Refrigerated	Food Preparation	Hot Food Container - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,063.46	18	\$619.03	45%	at stock turnover	\$0.03	0	0	Developed from RTF "ComCookingHotFoodCabinet" v2.0
Warehouse - Refrigerated	Food Preparation	Oven - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,191.46	10	\$358.17	49%	at stock turnover	\$0.02	0	0	Developed from RTF "ComCookingConvectionOven" v2.0
Warehouse - Refrigerated	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,168.16	23	\$112,693.64	2%	at stock turnover	\$0.87	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	26,893.73	10	\$15,000.00	15%	35%	\$0.07	1	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	364,799.41	15	\$3,570.00	15%	25%	\$0.00	3	3	Developed from RTF
Warehouse - Refrigerated	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	45,271.02	15	\$31,750.00	20%	65%	\$0.06	3	3	BEST Simulation
Warehouse - Refrigerated	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,599.04	23	\$91,501.06	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,328.29	18	\$70.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	184,346.33	45	\$126,270.00	15%	35%	\$0.05	5	5	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,545.69	20	\$820.00	15%	50%	\$0.01	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	44,437.52	45	\$69,280.00	15%	35%	\$0.11	1	1	BPA
Warehouse - Refrigerated	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	34,869.85	20	\$35,000.00	15%	50%	\$0.08	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	136,957.26	45	\$77,100.00	15%	35%	\$0.05	4	4	BEST Simulation
Warehouse - Refrigerated	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	52,943.81	3	\$61,000.00	10%	75%	\$0.31	4	142	6th Plan
Warehouse - Refrigerated	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	14	\$75,770.00	3%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	38,314.57	3	\$31,750.00	3%	11%	\$0.20	0	13	BEST Simulation
Warehouse - Refrigerated	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	229,981.79	20	\$400,000.00	10%	15%	\$0.12	1	1	AEG research & analysis
Warehouse - Refrigerated	Heating	Air Source Heat Pump - EER 9.8, COP 3.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	6,667.85	23	\$112,357.57	2%	at stock turnover	\$0.79	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	48,535.78	3	\$96,000.00	10%	75%	\$0.53	2	2	6th Plan
Warehouse - Refrigerated	Heating	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	25,282.80	10	\$15,000.00	15%	50%	\$0.07	0	0	AEG research & analysis
Warehouse - Refrigerated	Heating	Ductless Mini Split Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	364,799.41	15	\$3,570.00	15%	25%	\$0.00	1	1	Developed from RTF
Warehouse - Refrigerated	Heating	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	42,729.72	15	\$31,750.00	20%	65%	\$0.07	1	1	BEST Simulation
Warehouse - Refrigerated	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per 100,000 sqft Warehouse - Refrigerated bldg.	New	19,074.56	23	\$68,569.58	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	-71.23	18	\$60.00	15%	50%	\$0.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	178,633.03	45	\$126,270.00	15%	50%	\$0.06	3	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	350.15	20	\$820.00	15%	50%	\$0.02	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Foundation - R-10	per 100,000 sqft Warehouse - Refrigerated bldg.	New	41,514.59	45	\$69,280.00	15%	50%	\$0.12	1	1	BPA
Warehouse - Refrigerated	Heating	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	32,655.41	20	\$35,000.00	15%	50%	\$0.09	1	1	BEST Simulation
Warehouse - Refrigerated	Heating	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	14,449.77	45	\$77,100.00	15%	50%	\$0.42	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Heating	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Heating	Space Heating - Heat Recovery Ventilator	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	14	\$75,770.00	6%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Heating	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	35,259.28	3	\$31,750.00	3%	11%	\$0.22	0	4	BEST Simulation
Warehouse - Refrigerated	Heating	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Heating	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,568.75	15	\$31,750.00	20%	65%	\$0.06	3	5	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	Existing	1,736.89	15	-\$89.43	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	Existing	2,214.50	15	\$708.41	100%	at stock turnover	\$0.01	83	76	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,221.03	5	\$34,360.00	5%	15%	\$0.66	1	1	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,408.81	5	\$3,280.00	15%	50%	\$0.05	4	8	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15,228.56	12	\$40,000.00	3%	25%	\$0.25	8	17	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,292.04	16	\$2,070.00	1%	3%	\$0.07	0	0	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	16,956.46	10	\$8,550.00	25%	75%	\$0.00	9	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	25	\$123,000.00	15%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$9,490.00	7%	15%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	904.38	5	\$11,000.00	10%	25%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	Existing	95.92	15	\$17.65	100%	at stock turnover	\$0.03	58	57	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	Existing	23.05	15	\$2.63	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,439.96	3	\$61,000.00	10%	75%	\$0.31	4	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	Existing	186.21	6	\$5.16	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	Existing	151.56	15	\$93.85	100%	at stock turnover	\$0.04	11	13	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,204.00	3	\$31,750.00	3%	11%	\$0.20	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	12,745.81	20	\$400,000.00	10%	15%	\$0.12	1	1	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,167.64	3	\$96,000.00	10%	75%	\$0.53	2	2	6th Plan
Warehouse - Refrigerated	Interior Lighting	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,308.50	15	\$31,750.00	20%	65%	\$0.07	1	2	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - High Output T5 (75.5 lm/W)	Lamp	New	1,736.89	15	-\$89.43	100%	at stock turnover	-\$0.02	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	Lamp	New	2,214.50	15	\$708.41	100%	at stock turnover	\$0.01	47	44	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per 100,000 sqft Warehouse - Refrigerated bldg.	New	7,194.00	5	\$34,360.00	5%	15%	\$0.72	0	0	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	11,968.74	5	\$3,280.00	15%	50%	\$0.05	2	2	Illinois TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Daylighting Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,504.42	12	\$40,000.00	4%	25%	\$0.26	3	5	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - LED Exit Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,049.54	16	\$2,070.00	1%	3%	\$0.08	0	0	Ameren Missouri TRM
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	15,235.14	10	\$8,550.00	25%	75%	\$0.00	3	6	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Skylights	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	25	\$123,000.00	18%	75%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Lighting - Timeclocks and Timers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$9,490.00	7%	15%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Interior Lighting	Interior Screw-in - Task Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	615.88	5	\$11,000.00	10%	25%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - LED (170 lm/W) - T8 HE (58.2 lm/W)	Lamp	New	95.92	15	\$17.65	100%	at stock turnover	\$0.03	33	33	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Linear Fluorescent - T8 HE (58.2 lm/W)	Lamp	New	23.05	15	\$2.63	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Lodging - Guest Room Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	0%	0%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Interior Lighting	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Interior Lighting	Screw-in - CFL (67.3 lm/W)	Lamp	New	186.21	6	\$5.16	100%	at stock turnover	\$0.01	0	0	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	Lamp	New	151.56	15	\$93.85	100%	at stock turnover	\$0.04	6	7	EIA 2011
Warehouse - Refrigerated	Interior Lighting	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,954.47	3	\$31,750.00	3%	11%	\$0.22	0	0	BEST Simulation
Warehouse - Refrigerated	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,036.92	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	15.14	7	\$30.00	1%	3%	\$0.38	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmcat28800050006&id=1152228085441
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	741.53	10	\$190.00	1%	3%	\$0.04	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	13	\$0.00	79%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	6,176.81	15	\$4,110.00	15%	75%	\$0.00	4	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,568.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	281.48	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse - Refrigerated	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	5,059.32	3	\$31,750.00	3%	11%	\$0.20	1	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,216.68	7	\$1,400.00	1%	2%	\$0.16	0	0	Developed from RTF
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Battery Chargers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	7	\$0.00	1%	3%	\$10.00	0	0	EERE: http://www.eere.energy.gov/buildings/appliance_standards/residential/battery_external.html and www.aceee.org/conf/mt02/CalwellWS44.pdf Best Buy - Energizer e2 Rechargeable Dock & Go Charger Model: CHPCWB-4, http://www.bestbuy.com/site/olspage.jsp?skuld=7943452&type=product&productCategoryId=pcmc28800050006&id=1152228085441
Warehouse - Refrigerated	Miscellaneous	ENERGY STAR Water Cooler	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$0.00	1%	3%	\$10.00	0	0	Energy Star: http://www.energystar.gov/ia/business/bulk_purchasing/bpsavings_calculator/BulkPurchasingWaterCooler.xls
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Standard NEMA Premium	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	13	\$0.00	95%	at stock turnover	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Non-HVAC Motors - Variable Speed Control - Variable Speed Motors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	6,176.81	15	\$4,110.00	15%	75%	\$0.00	2	1	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Heater - Heat Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,568.74	10	\$0.00	0%	at stock turnover	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Miscellaneous	Pool Pump - High Efficiency	per 100,000 sqft Warehouse - Refrigerated bldg.	New	281.48	10	\$0.00	0%	at stock turnover	\$0.00	0	0	Hawaii TRM
Warehouse - Refrigerated	Miscellaneous	Pool Pump - Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$60.00	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Miscellaneous	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	4,790.81	3	\$31,750.00	3%	11%	\$0.22	1	1	BEST Simulation
Warehouse - Refrigerated	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,000,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,988.93	6	\$14.92	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	694.30	4	\$2,650.00	10%	50%	\$1.00	2	3	Developed from RTF
Warehouse - Refrigerated	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	313.26	6	\$7.76	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	345.95	6	\$23.39	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,135.07	5	\$4,000.00	10%	25%	\$0.43	3	1	5th Plan
Warehouse - Refrigerated	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	809.08	6	\$4.67	77%	at stock turnover	\$0.00	1	1	Assumed same as Desktop

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	431.97	6	\$5.52	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,902.84	6	\$19.39	89%	at stock turnover	\$0.00	3	3	Assumed same as Desktop
Warehouse - Refrigerated	Office Equipment	Data Center - Direct Server Cabinet Cooling	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$300,000.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Data Center - Server Virtualization	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$10,500.00	0%	0%	\$10.00	0	0	E3T Website
Warehouse - Refrigerated	Office Equipment	Desktop Computer - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,988.93	6	\$14.92	100%	at stock turnover	\$0.00	1	1	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Electronics - Smart Power Strips	per 100,000 sqft Warehouse - Refrigerated bldg.	New	764.14	4	\$2,650.00	10%	50%	\$0.87	1	1	Developed from RTF
Warehouse - Refrigerated	Office Equipment	Laptop - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	313.26	6	\$7.76	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Monitor - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	345.95	6	\$23.39	100%	at stock turnover	\$0.01	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Office Equipment - Plug Load Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,431.91	5	\$4,000.00	10%	25%	\$0.38	1	1	5th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Office Equipment	POS Terminal - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	809.08	6	\$5.14	85%	at stock turnover	\$0.00	0	0	Assumed same as Desktop
Warehouse - Refrigerated	Office Equipment	Printer/Copier/Fax - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	431.97	6	\$5.52	100%	at stock turnover	\$0.00	0	0	ENERGY STAR Calculator
Warehouse - Refrigerated	Office Equipment	Server - ENERGY STAR	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,902.84	6	\$21.78	100%	at stock turnover	\$0.00	2	2	Assumed same as Desktop
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,630.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	13,938.17	9	\$1,437.46	92%	at stock turnover	\$0.02	18	16	EIA 2011
Warehouse - Refrigerated	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	290,710.68	8	\$2,540.00	13%	70%	\$0.00	209	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	23,284.62	9	\$110.00	5%	77%	\$0.00	21	17	PacifiCorp Program Data

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$2,310.00	12%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	16	\$160.00	2%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$16,270.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$5,390.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse - Refrigerated	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	32,150.93	10	\$8,545.18	92%	at stock turnover	\$0.08	29	25	EIA 2011
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case - LED Lighting	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$1,550.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Display Case Motion Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	8	\$200.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Grocery - Open Display Case - Night Covers - Covers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$2,530.00	0%	0%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Refrigeration	Icemaker - 6.1 kWh/100 lbs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	13,938.17	9	\$1,567.57	100%	at stock turnover	\$0.02	10	9	EIA 2011
Warehouse - Refrigerated	Refrigeration	Refrigeration - Anti-Sweat Heater Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	341,046.73	8	\$2,540.00	13%	70%	\$0.00	108	41	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - Decommissioning and Recycling - Unit Recycled	per 100,000 sqft Warehouse - Refrigerated bldg.	New	23,272.22	9	\$110.00	5%	77%	\$0.00	9	8	PacifiCorp Program Data
Warehouse - Refrigerated	Refrigeration	Refrigeration - Door Gasket Replacement - Replaced	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$2,310.00	12%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Evaporator Fan Controls	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	16	\$160.00	2%	25%	\$10.00	0	0	DEER
Warehouse - Refrigerated	Refrigeration	Refrigeration - Floating Head Pressure	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$16,270.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Refrigeration - High Efficiency Compressor	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$5,390.00	0%	0%	\$10.00	0	0	AEO 2013
Warehouse - Refrigerated	Refrigeration	Refrigeration - Strip Curtain	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	4	\$10.00	0%	0%	\$10.00	0	0	Developed from RTF
Warehouse - Refrigerated	Refrigeration	Vending Machine - 1,820 kWh/yr	per 100,000 sqft Warehouse - Refrigerated bldg.	New	32,150.93	10	\$9,318.63	100%	at stock turnover	\$0.08	20	19	EIA 2011

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	3	\$96,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	10	\$15,000.00	15%	35%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,880.33	15	\$31,750.00	20%	65%	\$0.06	1	2	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,581.43	18	\$70.00	15%	50%	\$0.00	1	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,307.46	50	\$250,000.00	15%	25%	\$1.73	0	1	6th Plan
Warehouse - Refrigerated	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	9,105.23	45	\$126,270.00	15%	35%	\$0.05	2	3	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	-32.62	20	\$820.00	15%	50%	\$0.01	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,826.61	20	\$35,000.00	15%	50%	\$0.08	1	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	549.39	45	\$77,100.00	15%	35%	\$0.05	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,360.03	3	\$61,000.00	10%	75%	\$0.31	2	9	6th Plan
Warehouse - Refrigerated	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,431.51	3	\$31,750.00	3%	11%	\$0.20	0	1	BEST Simulation
Warehouse - Refrigerated	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	5	\$170.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	873.26	15	\$22,000.00	15%	75%	\$0.00	1	0	6th Plan
Warehouse - Refrigerated	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,296.25	18	\$17,000.00	15%	35%	\$0.20	2	7	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	37,983.82	20	\$34,356.09	100%	at stock turnover	\$0.09	7	7	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	24,873.86	15	\$2,890.00	13%	50%	\$0.01	10	7	BEST Simulation
Warehouse - Refrigerated	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$20.00	48%	48%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,850.50	20	\$400,000.00	10%	15%	\$0.12	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Commissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,048.73	3	\$96,000.00	10%	75%	\$0.53	1	1	6th Plan
Warehouse - Refrigerated	Ventilation	Cool Roofs - Absorbptivity 0.2	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$78,000.00	45%	50%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Doors - High Efficiency - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	10	\$15,000.00	15%	50%	\$0.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Energy Management System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,795.93	15	\$31,750.00	20%	65%	\$0.07	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Duct Repair and Sealing - Sealed	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,387.86	18	\$60.00	15%	50%	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	HVAC - Occupancy Sensors	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	15	\$260.00	15%	75%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	HVAC - Outside or Underfloor Air Distribution	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,999.90	50	\$250,000.00	15%	25%	\$2.26	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Insulation - Ceiling - R-38	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,814.70	45	\$126,270.00	15%	50%	\$0.06	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Ducting - R-8	per 100,000 sqft Warehouse - Refrigerated bldg.	New	407.02	20	\$820.00	15%	50%	\$0.02	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Radiant Barrier - R-5	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,133.55	20	\$35,000.00	15%	50%	\$0.09	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Insulation - Wall Cavity - R-23	per 100,000 sqft Warehouse - Refrigerated bldg.	New	70.38	45	\$77,100.00	15%	50%	\$0.42	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Optimized Variable Volume Lab Hood Design - 0	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Ventilation	Retrocommissioning	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	3	\$61,000.00	0%	0%	\$10.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Strategic Energy Management	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,510.25	3	\$31,750.00	3%	11%	\$0.22	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Ventilation	Thermostat - Clock/Programmable	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	5	\$450.00	10%	10%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - CO2 Controlled - On-Demand Ventilation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	528.03	15	\$13,000.00	15%	75%	\$0.00	0	0	6th Plan
Warehouse - Refrigerated	Ventilation	Ventilation - ECM on VAV Boxes	per 100,000 sqft Warehouse - Refrigerated bldg.	New	5,078.16	18	\$17,000.00	15%	35%	\$0.31	1	1	DEER
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Air Volume	per 100,000 sqft Warehouse - Refrigerated bldg.	New	32,655.07	20	\$31,453.00	100%	at stock turnover	\$0.10	2	2	BEST Simulation
Warehouse - Refrigerated	Ventilation	Ventilation - Variable Speed Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	15,705.23	15	\$2,890.00	19%	50%	\$0.02	3	2	BEST Simulation
Warehouse - Refrigerated	Ventilation	Windows - High Efficiency - U-0.35 Window	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$20.00	66%	66%	\$10.00	0	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$400,000.00	0%	0%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,577.28	5	\$18,000.00	3%	75%	\$1.06	2	2	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	395.04	7	\$1,400.00	1%	4%	\$0.18	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse - Refrigerated	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,596.58	5	\$4,000.00	1%	10%	\$0.00	0	0	AEG study for LA Dept of Water & Power
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	9,987.22	5	\$1,320.00	25%	65%	\$0.03	1	1	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	1,289.11	15	\$1,160.00	15%	75%	\$0.00	1	0	Hawaii TRM
Warehouse - Refrigerated	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	149.74	15	\$30.00	15%	75%	\$0.02	0	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	2,312.62	15	\$4,420.00	16%	75%	\$0.20	1	1	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	8,492.90	20	\$12,500.00	1%	30%	\$0.14	2	4	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	831.46	13	\$38.99	64%	at stock turnover	\$0.01	1	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	Existing	3,427.02	5	\$18,000.00	3%	75%	\$1.06	2	0	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Advanced New Construction Designs	per 100,000 sqft Warehouse - Refrigerated bldg.	New	12,032.70	20	\$400,000.00	10%	15%	\$0.12	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Air-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,453.61	5	\$18,000.00	6%	75%	\$1.06	1	1	AEG study for PN&L
Warehouse - Refrigerated	Water Heating	Clothes Washers - ENERGY STAR - ENERGY STAR Clothes Washers	per 100,000 sqft Warehouse - Refrigerated bldg.	New	399.07	7	\$1,400.00	1%	2%	\$0.16	0	0	Developed from RTF
Warehouse - Refrigerated	Water Heating	Water Heater - Desuperheater	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	20	\$1,120.00	0%	0%	\$10.00	0	0	Developed from RTF (Residential)
Warehouse - Refrigerated	Water Heating	Water Heater - Drainwater Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,602.58	5	\$4,000.00	0%	75%	\$0.00	1	0	AEG study for LA Dept of Water & Power
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Aerators/Low Flow Nozzles - 1.5 GPM	per 100,000 sqft Warehouse - Refrigerated bldg.	New	9,963.69	5	\$1,320.00	25%	65%	\$0.03	1	2	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Faucet Motion Sensor Control	per 100,000 sqft Warehouse - Refrigerated bldg.	New	0.00	1	\$0.00	10%	20%	\$10.00	0	0	AEG research & analysis
Warehouse - Refrigerated	Water Heating	Water Heater - High Efficiency Circulation Pump	per 100,000 sqft Warehouse - Refrigerated bldg.	New	1,303.66	15	\$1,160.00	15%	75%	\$0.00	0	0	Hawaii TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Warehouse - Refrigerated	Water Heating	Water Heater - Install Timer	per 100,000 sqft Warehouse - Refrigerated bldg.	New	150.07	15	\$30.00	15%	75%	\$0.02	0	0	DEER
Warehouse - Refrigerated	Water Heating	Water Heater - Pipe Insulation	per 100,000 sqft Warehouse - Refrigerated bldg.	New	2,325.34	15	\$4,420.00	1%	75%	\$0.20	1	1	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heater - Solar System	per 100,000 sqft Warehouse - Refrigerated bldg.	New	8,520.77	20	\$12,500.00	1%	30%	\$0.14	1	2	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water Heating - EF 0.89	per 100,000 sqft Warehouse - Refrigerated bldg.	New	831.46	13	\$38.99	64%	at stock turnover	\$0.01	0	0	BEST Simulation
Warehouse - Refrigerated	Water Heating	Water-Cooled Chiller - Chiller Heat Recovery	per 100,000 sqft Warehouse - Refrigerated bldg.	New	3,321.84	5	\$18,000.00	6%	75%	\$1.06	1	0	AEG study for PN&L

Industrial Measures

California Industrial Measure Assumptions

Table H-11 Table of California Industrial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	35,626.76	23	\$58,438.99	2%	at stock turnover	\$0.17	2	2	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	19,576.05	23	\$7,955.30	6%	at stock turnover	\$0.04	3	3	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,313.60	10	\$2,556.13	15%	45%	\$0.04	1	1	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	34,386.23	23	\$52,638.14	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,617.19	15	\$1,140.60	15%	60%	\$0.08	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	470.38	15	\$452.34	15%	75%	\$0.10	0	0	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	17,027.96	15	\$243,600.55	15%	50%	\$1.44	4	4	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	Existing	15,047.18	12	\$30,332.42	15%	50%	\$0.24	3	4	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	Existing	4,454.25	15	\$38,476.69	20%	50%	\$0.20	1	1	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	Existing	14,517.76	18	\$19,449.96	15%	75%	\$0.11	1	1	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	910.43	18	\$1,847.44	15%	25%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	Existing	6,017.01	10	\$12,500.78	18%	30%	\$0.09	1	0	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,984.72	45	\$158,435.72	15%	25%	\$0.17	1	1	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,624.70	20	\$2,998.26	15%	25%	\$0.08	0	0	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	847.05	45	\$21,126.81	45%	50%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	Existing	27,913.78	23	\$59,959.71	5%	at stock turnover	\$0.22	1	1	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	Existing	4,059.85	3	\$829.44	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$517.05	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	Existing	1,383.06	10	\$3,889.93	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	28,573.20	23	\$12,036.71	3%	at stock turnover	\$0.04	2	2	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,057.71	10	\$2,569.76	15%	45%	\$0.04	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,752.96	4	\$1,553.62	15%	50%	\$0.04	0	1	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,926.13	15	\$1,411.20	15%	60%	\$0.08	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	410.95	15	\$411.16	15%	75%	\$0.10	0	0	BEST Simulation
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	27,216.08	23	\$44,383.29	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,485.47	23	\$119,312.27	6%	at stock turnover	\$8.36	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,960.04	10	\$2,714.03	15%	45%	\$0.04	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,084.47	15	\$760.40	15%	60%	\$0.08	0	0	BEST Simulation
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	1	2	AEO 2013
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$6,874.25	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	7,423.17	15	\$243,600.55	15%	50%	\$3.26	0	0	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	New	8,825.75	12	\$20,733.60	15%	50%	\$0.27	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	New	2,624.79	15	\$31,327.81	20%	50%	\$0.18	0	0	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	22,581.42	23	\$34,567.44	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	3,282.86	23	\$42,329.69	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	26,248.89	23	\$39,977.65	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	New	9,499.88	18	\$14,500.24	15%	75%	\$0.12	0	0	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	789.34	18	\$1,254.85	15%	25%	\$0.08	0	0	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	New	3,442.75	10	\$7,773.98	18%	30%	\$0.10	0	0	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	New	549.15	45	\$115,774.35	15%	25%	\$0.15	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	7	8	AEO 2013
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	New	1,551.30	20	\$870.62	15%	25%	\$0.22	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	89.06	45	\$12,924.02	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	New	16,603.48	23	\$35,493.60	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	New	2,380.74	3	\$711.79	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,387.05	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	New	205.07	32	\$11,915.93	15%	52%	\$0.39	0	0	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	18,609.31	23	\$9,125.46	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,352.74	10	\$1,671.58	15%	45%	\$0.04	0	0	DEER
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,769.73	4	\$1,005.30	15%	50%	\$0.04	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	706.95	15	\$622.31	15%	60%	\$0.08	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$13,587.20	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$38,476.69	20%	50%	\$0.20	0	1	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$93.81	15%	25%	\$0.04	0	1	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$219.51	33%	60%	\$0.12	0	1	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,499.44	15%	30%	\$0.07	3	6	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	17	19	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	9	10	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	12	25	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	47.67	15	-\$10.44	100%	at stock turnover	\$0.05	1	4	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$829.44	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$3,889.93	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$31,327.81	20%	50%	\$0.18	0	0	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$93.19	15%	25%	\$0.04	0	0	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$134.37	44%	60%	\$0.07	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,492.32	15%	30%	\$0.06	0	1	AEG research & analysis
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,411.42	23	\$49,607.91	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	3	3	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	2	4	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$711.79	0%	5%	\$0.01	0	0	BEST Simulation
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	202	222	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	24.07	15	\$6.01	100%	at stock turnover	\$0.05	4	11	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$11,915.93	15%	52%	\$0.39	0	0	6th Plan
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,999.03	23	\$64,458.23	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$30,332.42	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	Existing	16,778.49	15	\$38,476.69	20%	50%	\$0.20	5	5	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,411.42	23	\$49,607.91	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	New	16,603.48	23	\$35,493.60	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	Existing	2,917.77	18	\$19,449.96	15%	75%	\$0.11	0	0	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,712.75	18	\$1,847.44	15%	25%	\$0.07	0	0	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	Existing	67,717.40	45	\$158,435.72	15%	25%	\$0.17	7	7	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	Existing	803.04	20	\$2,998.26	15%	25%	\$0.08	0	0	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	25,457.46	45	\$21,126.81	45%	50%	\$0.07	1	1	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	Existing	14,743.78	3	\$829.44	0%	5%	\$0.01	1	1	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$517.05	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	Existing	5,094.69	10	\$3,889.93	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,705.76	23	\$56,842.06	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$20,733.60	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	New	16,080.85	15	\$31,327.81	20%	50%	\$0.18	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,585.73	23	\$37,676.25	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	New	1,816.72	18	\$14,500.24	15%	75%	\$0.12	0	0	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	870.52	18	\$1,254.85	15%	25%	\$0.08	0	0	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	New	65,127.56	45	\$115,774.35	15%	25%	\$0.15	1	1	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	New	-1,349.58	20	\$870.62	15%	25%	\$0.22	0	0	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	New	18,277.85	45	\$12,924.02	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	New	14,159.99	3	\$711.79	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,387.05	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	New	1,306.77	32	\$11,915.93	15%	52%	\$0.39	0	0	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$38,476.69	20%	50%	\$0.20	2	3	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	134	151	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,956.82	5	\$635.63	5%	40%	\$0.04	3	6	Illinois TRM
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.34	5	\$847.40	15%	50%	\$0.04	4	8	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,698.36	3%	25%	\$0.11	9	19	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	822.11	16	\$104.96	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Paper Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,756.49	7%	60%	\$0.08	19	36	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$38,081.94	15%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$492.59	7%	15%	\$0.04	1	3	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	282.87	5	\$26.63	10%	25%	\$0.01	0	0	AEG research & analysis
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	New	15,220.35	23	\$32,536.86	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	24,948.88	23	\$40,686.00	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	68	74	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	14	28	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	88.14	15	-\$6.85	100%	at stock turnover	\$0.05	1	4	EIA 2011/Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$829.44	0%	5%	\$0.01	0	1	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$3,889.93	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$31,327.81	20%	50%	\$0.18	0	0	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	20	25	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,485.37	5	\$635.01	5%	40%	\$0.04	0	1	Illinois TRM
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,207.67	5	\$846.78	15%	50%	\$0.04	0	1	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$5,356.86	4%	25%	\$0.10	1	2	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.17	16	\$104.65	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,861.76	22%	60%	\$0.08	1	2	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$38,081.94	18%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$479.28	7%	15%	\$0.03	0	0	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.13	5	\$26.32	10%	25%	\$0.02	0	0	AEG research & analysis
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	10	12	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	2	4	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	New	712.73	3	\$711.79	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$11,915.93	15%	52%	\$0.39	0	0	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	7,456.81	5	\$154.80	15%	33%	\$0.01	13	13	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	Existing	2,885.79	3	\$3,706.64	5%	39%	\$0.10	9	9	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,506.97	3	\$829.44	0%	5%	\$0.01	1	1	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	866.28	10	\$3,889.93	15%	24%	\$0.05	1	1	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	7,456.81	5	\$154.80	15%	33%	\$0.01	1	1	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Miscellaneous	Commissioning	per Facility	New	2,877.31	3	\$3,706.64	5%	39%	\$0.10	1	1	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	New	2,497.01	3	\$711.79	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	New	233.46	32	\$11,915.93	15%	52%	\$0.39	0	0	6th Plan
Agriculture	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	33,407.43	23	\$50,880.27	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	11,653.79	10	\$391.66	15%	75%	\$0.01	34	34	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	11,944.71	15	\$7,581.40	15%	50%	\$0.06	19	21	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessiccant Dryer	per Facility	Existing	3,025.55	15	\$1,099.11	15%	38%	\$0.04	3	3	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	356.29	5	\$67.49	15%	50%	\$0.04	1	1	MI - TRM
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	0	0	AEO 2013
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	5,566.58	20	\$4,722.16	15%	50%	\$0.07	9	10	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	3,067.50	15	\$1,107.16	15%	38%	\$0.04	3	3	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	6,473.02	10	\$2,457.68	15%	50%	\$0.05	11	11	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,322.07	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	Existing	5,102.75	15	\$2,604.43	8%	38%	\$0.05	7	8	AEG study for State of New Mexico
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	20,355.51	23	\$8,272.05	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,908.73	3	\$277.72	8%	38%	\$0.03	4	4	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	8,359.23	15	\$4,167.03	8%	38%	\$0.05	12	13	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$619.22	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	37,355.82	10	\$5,366.77	8%	38%	\$0.02	54	54	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	Existing	12,578.20	15	\$1,565.38	8%	38%	\$0.01	18	18	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	Existing	6,441.66	3	\$445.22	8%	38%	\$0.02	9	9	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	19,222.80	10	\$4,007.27	8%	38%	\$0.03	27	28	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	906.59	8	\$1,392.93	10%	50%	\$0.25	7	7	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	643.24	8	\$493.83	5%	25%	\$0.12	2	3	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	Existing	46,615.15	10	\$973.72	15%	35%	\$0.00	45	45	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,702.89	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$10.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	16,500.44	17	\$1,256.39	5%	6%	\$0.01	3	3	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,574.97	10	\$590.12	15%	36%	\$0.03	10	11	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	Existing	15,805.32	17	\$9,068.76	25%	44%	\$0.06	56	58	RSMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,622.12	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,750.84	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	6,598.95	10	\$1,446.80	8%	38%	\$0.03	9	10	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	Existing	6,664.91	15	\$1,764.15	8%	38%	\$0.03	9	10	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	Existing	3,475.20	3	\$501.88	8%	38%	\$0.05	5	5	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	10,796.44	12	\$4,900.19	8%	38%	\$0.06	15	16	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	Existing	6,207.07	3	\$3,706.64	5%	39%	\$0.10	39	41	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	Existing	5,716.97	3	\$829.44	0%	5%	\$0.01	5	6	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$1,016.14	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	Existing	1,918.43	10	\$3,889.93	15%	24%	\$0.05	3	3	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$917.68	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	0	0	AEO 2013
Agriculture	Motors	Commissioning	per Facility	New	5,463.29	3	\$3,706.64	5%	39%	\$0.10	5	5	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	New	11,653.79	10	\$391.66	15%	75%	\$0.01	4	4	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	12,002.87	15	\$7,581.40	15%	50%	\$0.06	2	2	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	3,040.94	15	\$1,099.11	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	22,968.78	23	\$9,334.03	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	33,525.23	23	\$14,122.79	3%	at stock turnover	\$0.04	0	0	BEST Simulation
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	352.99	5	\$67.49	15%	50%	\$0.04	0	0	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	New	5,604.57	20	\$4,722.16	15%	50%	\$0.07	1	1	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	3,082.03	15	\$1,107.16	15%	38%	\$0.04	0	0	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	6,417.48	10	\$2,457.68	15%	50%	\$0.05	1	1	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,322.07	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,887.63	20	\$8,273.22	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Agriculture	Motors	Compressed Air - System Controls	per Facility	New	5,185.66	15	\$2,604.43	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	New	2,928.80	3	\$277.72	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	8,182.51	15	\$4,167.03	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$619.22	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	37,217.76	10	\$5,366.77	8%	38%	\$0.02	6	6	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	New	12,580.69	15	\$1,565.38	8%	38%	\$0.01	2	2	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	New	6,340.94	3	\$445.22	8%	38%	\$0.02	1	1	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	New	18,882.29	10	\$4,007.27	8%	38%	\$0.03	3	3	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	795.52	8	\$1,392.93	10%	50%	\$0.28	1	1	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	564.44	8	\$493.83	5%	25%	\$0.14	0	0	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	New	46,615.15	10	\$973.72	15%	35%	\$0.00	5	5	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,702.89	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$10.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	14,628.95	17	\$1,256.39	5%	6%	\$0.01	0	0	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,268.44	10	\$590.12	15%	36%	\$0.04	1	1	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	New	14,119.86	17	\$5,441.38	25%	44%	\$0.04	8	8	RSMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,622.12	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,750.84	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	6,456.07	10	\$1,446.80	8%	38%	\$0.03	1	1	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	New	6,546.71	15	\$1,764.15	8%	38%	\$0.03	1	1	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	New	3,337.43	3	\$501.88	8%	38%	\$0.05	1	1	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	New	10,352.66	12	\$4,900.19	8%	38%	\$0.06	2	2	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	New	5,067.46	3	\$711.79	0%	5%	\$0.01	1	1	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$1,016.14	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	New	442.22	32	\$11,915.93	15%	52%	\$0.39	0	0	6th Plan
Wastewater	Cooling	RTU - EER 12.0	per Facility	Existing	25,588.46	23	\$54,964.85	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$917.68	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$449.55	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$8.05	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$38.39	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,381.24	20	\$6,463.79	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Wastewater	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.74	15	\$6.95	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$45.82	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	3,182.41	10	\$14,226.54	15%	15%	\$0.60	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$29.41	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,415.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$157.28	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,438.44	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	396.57	15	\$74.62	15%	16%	\$0.02	0	0	MT - IRP 2013
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	7,064.34	15	\$54.18	15%	16%	\$0.00	0	0	OPA - TRM
Agriculture	Process	Heat Lamps	per Facility	Existing	13,112.95	10	\$318.28	15%	16%	\$0.00	1	1	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	Existing	11,972.52	10	\$10,907.53	15%	16%	\$0.13	1	1	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$4,910.40	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$83.90	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$4,053.71	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$36,890.87	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	Existing	110.33	5	\$32.82	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,100.35	10	\$659.16	15%	75%	\$0.09	3	3	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	Existing	2,292.18	5	\$3,574.44	15%	75%	\$0.36	32	33	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	8,822.55	15	\$4,654.67	15%	50%	\$0.06	15	15	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	Existing	16,921.76	18	\$11,171.01	15%	50%	\$0.07	28	29	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	Existing	5,940.17	3	\$620.46	15%	50%	\$0.04	10	10	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	17,401.40	15	\$9,309.02	15%	50%	\$0.06	29	30	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	Existing	1,345.46	3	\$3,706.64	5%	39%	\$0.10	55	11	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	Existing	3,464.21	3	\$829.44	0%	5%	\$0.01	4	4	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	Existing	1,192.94	10	\$3,889.93	15%	24%	\$0.05	3	3	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$449.55	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$8.05	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$38.39	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$45.82	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	New	2,074.91	3	\$3,706.64	5%	39%	\$0.10	6	4	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	3,168.34	10	\$14,226.54	15%	15%	\$0.60	0	0	VT - TRM
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$29.41	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,415.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$157.28	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,438.44	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	New	396.51	15	\$74.62	15%	16%	\$0.02	0	0	MT - IRP 2013
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	New	7,064.34	15	\$54.18	15%	16%	\$0.00	0	0	OPA - TRM
Agriculture	Process	Heat Lamps	per Facility	New	13,110.43	10	\$318.28	15%	16%	\$0.00	0	0	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	New	11,943.09	10	\$10,907.53	15%	16%	\$0.13	0	0	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$4,910.40	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$83.90	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$4,053.71	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$36,890.87	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$32.82	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$659.16	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	New	2,778.02	5	\$3,574.44	15%	75%	\$0.30	4	4	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	8,836.87	15	\$4,654.67	15%	50%	\$0.06	2	2	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	New	16,992.79	18	\$11,171.01	15%	50%	\$0.07	3	3	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	New	5,942.62	3	\$620.46	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	17,444.67	15	\$9,309.02	15%	50%	\$0.06	3	3	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	New	4,209.93	3	\$711.79	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	New	375.45	32	\$11,915.93	15%	52%	\$0.39	0	0	6th Plan
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$30,332.42	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	Existing	515.77	3	\$829.44	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	Existing	177.99	10	\$3,889.93	15%	24%	\$0.05	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	188.92	15	\$46.13	15%	35%	\$0.03	0	0	6th Plan
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,870.25	20	\$7,051.18	100%	at stock turnover	\$0.13	3	3	BEST Simulation
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$20,733.60	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	New	198.05	3	\$711.79	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	New	18.68	32	\$11,915.93	15%	52%	\$0.39	0	0	6th Plan
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	72.57	15	\$21.98	15%	35%	\$0.04	0	0	6th Plan
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,462.52	20	\$4,439.54	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	47,844.59	23	\$78,480.04	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	26,289.45	23	\$10,683.48	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,164.66	10	\$3,111.28	15%	45%	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,171.78	15	\$1,387.97	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	631.69	15	\$549.60	15%	75%	\$0.09	0	0	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	22,867.52	15	\$2,443,070.33	15%	50%	\$10.76	0	0	BEST Simulation
Chemical Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	20,207.46	12	\$36,909.99	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	Existing	5,981.79	15	\$46,222.10	20%	50%	\$0.18	0	0	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	46,178.63	23	\$70,689.84	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	19,496.47	18	\$23,666.86	15%	75%	\$0.10	0	0	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,222.65	18	\$2,248.07	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	Existing	8,080.49	10	\$15,211.75	18%	30%	\$0.08	0	0	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	14,751.81	45	\$192,790.79	15%	25%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,524.81	20	\$3,648.46	15%	25%	\$0.08	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,137.54	45	\$25,706.89	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	37,486.52	23	\$80,522.27	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	Existing	5,452.14	3	\$1,176.82	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,037.09	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,857.37	10	\$5,536.34	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	38,372.08	23	\$16,164.57	3%	at stock turnover	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,821.02	10	\$3,126.81	15%	45%	\$0.04	0	0	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,440.58	4	\$1,890.99	15%	50%	\$0.03	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,586.68	15	\$1,717.10	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	551.88	15	\$499.92	15%	75%	\$0.09	0	0	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	36,549.55	23	\$59,604.08	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,994.90	23	\$470,055,048.55	6%	at stock turnover	\$24,526.76	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	12,032.79	10	\$3,303.80	15%	45%	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,456.37	15	\$925.31	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$13,789.62	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	9,968.87	15	\$2,443,070.33	15%	50%	\$24.32	0	0	BEST Simulation
Chemical Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	11,852.45	12	\$25,228.71	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	New	3,524.93	15	\$37,527.90	20%	50%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	35,250.67	23	\$53,687.57	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	12,757.77	18	\$17,643.02	15%	75%	\$0.11	0	0	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,060.03	18	\$1,527.70	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	New	4,623.40	10	\$9,461.15	18%	30%	\$0.09	0	0	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	737.48	45	\$140,877.10	15%	25%	\$0.14	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	2,083.30	20	\$1,058.83	15%	25%	\$0.20	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	119.60	45	\$15,727.19	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	New	22,297.47	23	\$47,665.77	5%	at stock turnover	\$0.22	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	New	3,197.19	3	\$1,033.99	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$2,782.14	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	New	275.40	32	\$17,282.83	15%	52%	\$0.39	0	0	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	24,991.18	23	\$12,254.95	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,845.46	10	\$2,033.82	15%	45%	\$0.04	0	0	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,748.40	4	\$1,223.40	15%	50%	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	949.40	15	\$757.64	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$27,253.21	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$46,222.10	20%	50%	\$0.18	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$83.84	15%	25%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$198.72	33%	60%	\$0.11	0	0	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,360.02	15%	30%	\$0.06	0	0	AEG research & analysis
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	0	0	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$1,176.82	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$5,536.34	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$37,527.90	20%	50%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$83.84	15%	25%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$121.10	44%	60%	\$0.06	0	0	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,350.71	15%	30%	\$0.06	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$1,033.99	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$17,282.83	15%	52%	\$0.39	0	0	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,713.39	23	\$86,563.51	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$36,909.99	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Heating	Energy Management System	per Facility	Existing	22,532.50	15	\$46,222.10	20%	50%	\$0.18	0	0	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,895.45	23	\$66,620.42	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	3,918.39	18	\$23,666.86	15%	75%	\$0.10	0	0	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,300.12	18	\$2,248.07	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	90,940.38	45	\$192,790.79	15%	25%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,078.43	20	\$3,648.46	15%	25%	\$0.08	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	34,187.83	45	\$25,706.89	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Heating	Strategic Energy Management	per Facility	Existing	19,800.00	3	\$1,176.82	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,037.09	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	6,841.86	10	\$5,536.34	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	10,348.38	23	\$76,335.45	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$25,228.71	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Heating	Energy Management System	per Facility	New	21,595.61	15	\$37,527.90	20%	50%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,501.30	23	\$50,596.92	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,439.75	18	\$17,643.02	15%	75%	\$0.11	0	0	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,169.05	18	\$1,527.70	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	87,462.38	45	\$140,877.10	15%	25%	\$0.14	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,812.41	20	\$1,058.83	15%	25%	\$0.20	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	24,546.05	45	\$15,727.19	45%	50%	\$0.06	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Heating	Strategic Energy Management	per Facility	New	19,016.01	3	\$1,033.99	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$2,782.14	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,754.91	32	\$17,282.83	15%	52%	\$0.39	0	0	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$46,222.10	20%	50%	\$0.18	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	1	1	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,956.82	5	\$574.44	5%	40%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.34	5	\$766.95	15%	50%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,163.73	3%	25%	\$0.10	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	822.11	16	\$96.26	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,403.16	7%	60%	\$0.07	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$381,923.81	15%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$447.13	7%	15%	\$0.03	0	0	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	282.87	5	\$24.84	10%	25%	\$0.01	0	0	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	0	0	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$1,176.82	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$5,536.34	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$37,527.90	20%	50%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	0	0	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,485.37	5	\$574.44	5%	40%	\$0.04	0	0	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,207.67	5	\$766.95	15%	50%	\$0.04	0	0	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$4,853.23	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.17	16	\$93.15	1%	3%	\$0.01	0	0	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,499.42	22%	60%	\$0.07	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$381,923.81	18%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$434.71	7%	15%	\$0.03	0	0	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.13	5	\$24.84	10%	25%	\$0.01	0	0	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	0	0	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	601.88	15	-\$500.62	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	712.73	3	\$1,033.99	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$17,282.83	15%	52%	\$0.39	0	0	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$310.51	0%	0%	\$10.00	0	0	MI - TRM
Chemical Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	3,232.08	3	\$5,576.71	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,807.81	3	\$1,176.82	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	970.23	10	\$5,536.34	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$310.51	0%	0%	\$10.00	0	0	MI - TRM
Chemical Mfg	Miscellaneous	Commissioning	per Facility	New	3,235.44	3	\$5,576.71	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,807.81	3	\$1,033.99	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	262.52	32	\$17,282.83	15%	52%	\$0.39	0	0	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	46,480.81	10	\$1,415.91	15%	75%	\$0.00	1	1	MI - TRM
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	48,136.53	15	\$27,399.15	15%	50%	\$0.06	0	0	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	12,142.97	15	\$3,971.39	15%	38%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,421.03	5	\$245.30	15%	50%	\$0.04	0	0	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	22,202.15	20	\$17,065.47	15%	50%	\$0.07	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	12,158.98	15	\$4,002.44	15%	38%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	25,833.41	10	\$8,883.61	15%	50%	\$0.05	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$4,657.61	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	20,850.67	15	\$9,411.47	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	11,633.26	3	\$1,002.94	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	32,875.04	15	\$15,059.60	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,242.03	15%	50%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	17,215.54	10	\$2,241.86	8%	38%	\$0.02	0	0	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	Existing	5,796.70	15	\$655.17	8%	38%	\$0.01	0	0	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	Existing	2,968.66	3	\$186.30	8%	38%	\$0.02	0	0	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	8,858.88	10	\$1,673.63	8%	38%	\$0.03	0	0	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,698.54	8	\$2,661.05	10%	50%	\$0.25	0	0	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,205.14	8	\$943.94	5%	25%	\$0.13	0	0	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$1,953.09	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,946.88	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$6.21	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	30,861.20	17	\$2,400.22	5%	6%	\$0.01	0	0	E3T Website
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	4,885.20	10	\$1,127.14	15%	36%	\$0.03	0	0	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	29,506.19	17	\$17,326.30	25%	44%	\$0.06	1	1	RSMeans 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,611.37	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,260.66	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	20,658.65	10	\$3,921.71	8%	38%	\$0.03	0	0	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	Existing	20,868.12	15	\$4,781.81	8%	38%	\$0.03	0	0	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	10,877.63	3	\$1,360.02	8%	38%	\$0.05	0	0	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	33,790.77	12	\$13,280.39	8%	38%	\$0.05	0	0	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	Existing	11,629.49	3	\$5,576.71	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	Existing	10,717.29	3	\$1,176.82	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$732.80	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	3,588.94	10	\$5,536.34	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,279.12	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	New	11,559.26	3	\$5,576.71	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	46,480.81	10	\$1,415.91	15%	75%	\$0.00	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	47,873.13	15	\$27,399.15	15%	50%	\$0.06	0	0	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	12,128.72	15	\$3,971.39	15%	38%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,407.88	5	\$245.30	15%	50%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	22,353.67	20	\$17,065.47	15%	50%	\$0.07	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	12,292.60	15	\$4,002.44	15%	38%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	25,595.96	10	\$8,883.61	15%	50%	\$0.05	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$4,657.61	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	New	20,682.85	15	\$9,411.47	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	11,681.43	3	\$1,002.94	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	32,635.70	15	\$15,059.60	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,242.03	15%	50%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	17,151.91	10	\$2,241.86	8%	38%	\$0.02	0	0	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	New	5,797.85	15	\$655.17	8%	38%	\$0.01	0	0	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	New	2,922.24	3	\$186.30	8%	38%	\$0.02	0	0	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	8,701.96	10	\$1,673.63	8%	38%	\$0.03	0	0	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,683.15	8	\$2,661.05	10%	50%	\$0.25	0	0	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,194.25	8	\$943.94	5%	25%	\$0.13	0	0	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$1,953.09	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,946.88	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$6.21	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	30,902.65	17	\$2,400.22	5%	6%	\$0.01	0	0	E3T Website
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	4,875.70	10	\$1,127.14	15%	36%	\$0.03	0	0	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	30,309.71	17	\$10,395.78	25%	44%	\$0.04	0	0	RSMeans 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,611.37	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,260.66	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	20,582.29	10	\$3,921.71	8%	38%	\$0.03	0	0	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	New	20,872.26	15	\$4,781.81	8%	38%	\$0.03	0	0	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	New	10,638.74	3	\$1,360.02	8%	38%	\$0.05	0	0	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	33,000.31	12	\$13,280.39	8%	38%	\$0.05	0	0	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	New	10,727.26	3	\$1,033.99	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$732.80	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	New	935.66	32	\$17,282.83	15%	52%	\$0.39	0	0	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,279.12	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,220.29	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$1,092.99	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$5,145.10	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$6,138.73	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$28,535.61	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$3,934.13	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$189,704.35	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$21,064.81	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$192,803.21	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$111.78	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$108.68	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$639.64	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$21,878.33	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$8,442.69	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$145.94	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$6,095.26	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$63,436.61	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	Existing	261.52	5	\$71.42	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,608.16	10	\$1,415.91	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	Existing	4,458.87	5	\$6,144.94	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	4,882.03	15	\$2,335.01	15%	50%	\$0.06	0	0	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	Existing	9,363.80	18	\$5,601.55	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	3,287.04	3	\$310.51	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	9,629.21	15	\$4,666.92	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	Existing	1,816.05	3	\$5,576.71	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	Existing	6,576.41	3	\$1,176.82	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	Existing	2,270.19	10	\$5,536.34	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,220.29	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$1,092.99	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$5,145.10	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$6,138.73	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Commissioning	per Facility	New	1,818.81	3	\$5,576.71	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$28,535.61	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$3,934.13	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$189,704.35	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$21,064.81	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$192,803.21	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$111.78	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$108.68	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$639.64	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$21,878.33	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$8,442.69	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$145.94	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$6,095.26	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$63,436.61	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	New	261.79	5	\$71.42	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,608.19	10	\$1,415.91	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	New	4,447.93	5	\$6,144.94	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	4,889.95	15	\$2,335.01	15%	50%	\$0.06	0	0	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	New	9,403.10	18	\$5,601.55	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	New	3,288.40	3	\$310.51	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	9,653.15	15	\$4,666.92	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	New	6,576.41	3	\$1,033.99	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	New	601.14	32	\$17,282.83	15%	52%	\$0.39	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$36,909.99	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	692.65	3	\$1,176.82	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	239.03	10	\$5,536.34	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	253.71	15	\$55.89	15%	35%	\$0.02	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	7,883.40	20	\$9,469.30	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$25,228.71	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	New	265.97	3	\$1,033.99	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	25.08	32	\$17,282.83	15%	52%	\$0.39	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	97.46	15	\$27.95	15%	35%	\$0.03	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,649.95	20	\$5,962.03	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	73,851.32	23	\$121,139.19	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	40,579.53	23	\$16,490.67	6%	at stock turnover	\$0.04	2	2	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	17,233.40	10	\$4,801.14	15%	45%	\$0.04	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,352.29	15	\$2,142.18	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	975.05	15	\$849.39	15%	75%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	36,695.95	15	\$71,445.51	15%	50%	\$0.20	2	3	BEST Simulation
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	30,258.53	12	\$56,972.62	15%	50%	\$0.22	2	2	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	9,233.30	15	\$70,402.25	20%	50%	\$0.18	0	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	71,279.80	23	\$109,114.49	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	30,094.11	18	\$36,532.56	15%	75%	\$0.10	0	1	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,887.25	18	\$3,469.76	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	12,472.77	10	\$23,479.77	18%	30%	\$0.08	0	0	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	22,770.41	45	\$297,585.28	15%	25%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	5,440.78	20	\$5,631.46	15%	25%	\$0.08	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,755.87	45	\$39,681.77	45%	50%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	57,862.95	23	\$124,291.51	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	8,415.74	3	\$1,096.74	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$151.64	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	2,866.97	10	\$5,077.55	15%	24%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	59,229.88	23	\$24,951.10	3%	at stock turnover	\$0.04	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	16,702.97	10	\$4,826.57	15%	45%	\$0.04	0	0	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	22,290.00	4	\$2,918.02	15%	50%	\$0.03	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,992.72	15	\$2,650.51	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	851.87	15	\$772.12	15%	75%	\$0.09	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	56,416.68	23	\$92,002.88	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	3,079.26	23	\$5,794,240.64	6%	at stock turnover	\$195.87	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	18,573.42	10	\$5,097.80	15%	45%	\$0.04	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,248.01	15	\$1,428.18	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,016.15	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	15,387.62	15	\$71,445.51	15%	50%	\$0.46	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	18,295.05	12	\$38,943.44	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	New	5,440.97	15	\$56,982.97	20%	50%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	54,411.77	23	\$82,870.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	19,692.47	18	\$27,235.29	15%	75%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,636.23	18	\$2,356.94	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	7,136.53	10	\$14,601.93	18%	30%	\$0.09	0	0	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,138.35	45	\$217,455.52	15%	25%	\$0.14	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	3,215.71	20	\$1,635.49	15%	25%	\$0.20	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	184.62	45	\$24,274.77	45%	50%	\$0.06	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	34,417.64	23	\$73,575.30	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	4,935.08	3	\$875.36	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$406.81	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	425.10	32	\$14,653.59	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	38,575.55	23	\$18,916.33	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	9,022.86	10	\$3,139.50	15%	45%	\$0.04	0	0	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	11,960.18	4	\$1,888.20	15%	50%	\$0.04	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,465.46	15	\$1,169.30	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$3,984.99	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$70,402.25	20%	50%	\$0.18	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$84.90	15%	25%	\$0.03	0	0	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$198.95	33%	60%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,358.54	15%	30%	\$0.06	1	2	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	5	5	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	2	3	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	3	7	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$1,096.74	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$5,077.55	15%	24%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$56,982.97	20%	50%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$84.54	15%	25%	\$0.03	0	0	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$121.86	44%	60%	\$0.06	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,352.18	15%	30%	\$0.06	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	1	1	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	1	1	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$875.36	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$14,653.59	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	10,362.57	23	\$133,616.57	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$56,972.62	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	Existing	34,780.43	15	\$70,402.25	20%	50%	\$0.18	3	3	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,925.76	23	\$102,833.08	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	6,048.29	18	\$36,532.56	15%	75%	\$0.10	0	0	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	3,550.39	18	\$3,469.76	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	140,372.56	45	\$297,585.28	15%	25%	\$0.16	4	4	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,664.63	20	\$5,631.46	15%	25%	\$0.08	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	52,771.21	45	\$39,681.77	45%	50%	\$0.06	1	1	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	30,562.63	3	\$1,096.74	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$151.64	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	10,560.86	10	\$5,077.55	15%	24%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	15,973.41	23	\$117,828.87	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$38,943.44	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	New	33,334.27	15	\$56,982.97	20%	50%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	11,578.75	23	\$78,099.74	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	3,765.91	18	\$27,235.29	15%	75%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,804.51	18	\$2,356.94	15%	25%	\$0.07	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	135,004.04	45	\$217,455.52	15%	25%	\$0.14	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-2,797.57	20	\$1,635.49	15%	25%	\$0.20	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	37,888.47	45	\$24,274.77	45%	50%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	29,352.49	3	\$875.36	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$406.81	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	2,708.82	32	\$14,653.59	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$70,402.25	20%	50%	\$0.18	1	1	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	35	40	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,831.74	5	\$575.98	5%	40%	\$0.03	1	2	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,942.43	5	\$767.94	15%	50%	\$0.03	1	2	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,163.27	3%	25%	\$0.10	2	5	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	822.11	16	\$95.07	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,403.92	7%	60%	\$0.07	5	9	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$11,169.04	15%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$446.22	7%	15%	\$0.03	0	1	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	282.87	5	\$24.06	10%	25%	\$0.01	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	18	20	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	4	7	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	96.97	15	\$9.00	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$1,096.74	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$5,077.55	15%	24%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$56,982.97	20%	50%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	5	7	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,485.37	5	\$575.34	5%	40%	\$0.04	0	0	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,207.67	5	\$767.12	15%	50%	\$0.04	0	0	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$4,853.72	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.17	16	\$94.71	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,499.18	22%	60%	\$0.07	0	1	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$11,169.04	18%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$434.41	7%	15%	\$0.03	0	0	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.13	5	\$23.88	10%	25%	\$0.01	0	0	AEG research & analysis
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	3	3	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	1	1	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	712.73	3	\$875.36	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$14,653.59	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$45.40	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	3,121.35	3	\$1,463.78	5%	39%	\$0.07	3	3	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,711.61	3	\$1,096.74	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	936.99	10	\$5,077.55	15%	24%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$45.40	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	3,124.59	3	\$1,463.78	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,711.61	3	\$875.36	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	253.53	32	\$14,653.59	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	4,568.13	10	\$139.02	15%	75%	\$0.00	4	4	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,730.85	15	\$2,692.74	15%	50%	\$0.06	2	2	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,196.68	15	\$390.37	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	139.66	5	\$23.97	15%	50%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	2,204.51	20	\$1,677.26	15%	50%	\$0.07	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,198.26	15	\$393.28	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	2,537.34	10	\$873.00	15%	50%	\$0.05	1	1	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$681.04	15%	30%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	2,047.94	15	\$925.03	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,143.32	3	\$98.71	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	3,228.98	15	\$1,480.03	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$181.61	15%	50%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	3,740.80	10	\$486.99	8%	38%	\$0.02	1	1	6th Plan
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	1,259.58	15	\$142.02	8%	38%	\$0.01	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	645.07	3	\$40.41	8%	38%	\$0.02	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	1,924.97	10	\$363.58	8%	38%	\$0.03	1	1	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	262.23	8	\$457.11	10%	50%	\$0.28	1	1	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	186.06	8	\$162.09	5%	25%	\$0.14	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$285.58	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,621.91	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$9.99	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	4,717.22	17	\$412.35	5%	6%	\$0.01	0	0	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	745.38	10	\$193.69	15%	36%	\$0.04	1	1	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	4,536.22	17	\$2,976.32	25%	44%	\$0.07	4	4	RSMeans 2013
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,513.52	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,698.51	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	779.33	10	\$147.92	8%	38%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	787.24	15	\$180.34	8%	38%	\$0.03	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	410.10	3	\$51.30	8%	38%	\$0.05	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	1,274.74	12	\$501.06	8%	38%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	1,795.46	3	\$1,463.78	5%	39%	\$0.07	3	3	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,638.17	3	\$1,096.74	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$985.60	15%	25%	\$10.00	0	0	MT - IRP 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	557.38	10	\$5,077.55	15%	24%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$400.36	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	New	2,042.79	3	\$1,463.78	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	4,568.13	10	\$139.02	15%	75%	\$0.00	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	4,704.97	15	\$2,692.74	15%	50%	\$0.06	0	0	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,199.07	15	\$390.37	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	138.37	5	\$23.97	15%	50%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	2,196.92	20	\$1,677.26	15%	50%	\$0.07	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,201.06	15	\$393.28	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	2,515.57	10	\$873.00	15%	50%	\$0.05	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$681.04	15%	30%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	2,032.71	15	\$925.03	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	1,148.05	3	\$98.71	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	3,207.43	15	\$1,480.03	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$181.61	15%	50%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	3,726.98	10	\$486.99	8%	38%	\$0.02	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	New	1,259.83	15	\$142.02	8%	38%	\$0.01	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	634.98	3	\$40.41	8%	38%	\$0.02	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	1,890.87	10	\$363.58	8%	38%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	297.45	8	\$457.11	10%	50%	\$0.25	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	211.05	8	\$162.09	5%	25%	\$0.13	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$285.58	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,621.91	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$9.99	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	5,340.45	17	\$412.35	5%	6%	\$0.01	0	0	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	846.25	10	\$193.69	15%	36%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	5,267.04	17	\$1,785.77	25%	44%	\$0.04	1	1	RSMeans 2013
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,513.52	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,698.51	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	776.45	10	\$147.92	8%	38%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	787.39	15	\$180.34	8%	38%	\$0.03	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	401.34	3	\$51.30	8%	38%	\$0.05	0	0	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	1,244.92	12	\$501.06	8%	38%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	1,853.84	3	\$875.36	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$985.60	15%	25%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	165.35	32	\$14,653.59	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$400.36	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$45.95	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	5,545.54	1	\$35.96	15%	75%	\$0.01	4	4	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	1,694.82	10	\$169.35	15%	75%	\$0.01	1	1	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	947.86	20	\$202.04	15%	75%	\$0.02	1	1	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,172.50	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	514.25	10	\$129.40	15%	75%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	10,081.80	10	\$6,243.13	15%	75%	\$0.07	7	8	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	619.28	10	\$693.21	15%	75%	\$0.07	0	1	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	5,384.89	10	\$6,345.10	15%	75%	\$0.08	3	5	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$60.75	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$15.89	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$93.35	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,199.07	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,635.62	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$45.13	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,300.77	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$19,800.43	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	695.87	5	\$188.33	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	6,887.51	10	\$3,766.69	15%	75%	\$0.08	5	5	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,317.72	5	\$1,918.44	15%	75%	\$0.33	5	5	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	2,187.94	15	\$1,045.89	15%	50%	\$0.06	1	1	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	4,196.50	18	\$2,510.22	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	1,473.13	3	\$139.48	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	4,315.45	15	\$2,091.79	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	593.04	3	\$1,463.78	5%	39%	\$0.07	6	1	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	2,030.62	3	\$1,096.74	0%	5%	\$0.01	1	1	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	697.03	10	\$5,077.55	15%	24%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$45.95	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	5,545.54	1	\$35.96	15%	75%	\$0.01	0	0	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	1,769.03	10	\$169.35	15%	75%	\$0.01	0	0	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	1,002.97	20	\$202.04	15%	75%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	New	713.02	3	\$1,463.78	5%	39%	\$0.07	1	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,172.50	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	538.86	10	\$129.40	15%	75%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	10,580.44	10	\$6,243.13	15%	75%	\$0.07	1	1	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	665.63	10	\$693.21	15%	75%	\$0.07	0	0	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	5,781.07	10	\$6,345.10	15%	75%	\$0.08	0	0	6th Plan
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$60.75	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$15.89	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$93.35	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,199.07	0%	0%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,635.62	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$45.13	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,300.77	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$19,800.43	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$188.33	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$3,766.69	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	1,142.52	5	\$1,918.44	15%	75%	\$0.37	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	2,191.49	15	\$1,045.89	15%	50%	\$0.06	0	0	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	4,214.12	18	\$2,510.22	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	1,473.74	3	\$139.48	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	4,326.18	15	\$2,091.79	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	New	1,787.93	3	\$875.36	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	156.29	32	\$14,653.59	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$56,972.62	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	1,069.15	3	\$1,096.74	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	368.95	10	\$5,077.55	15%	24%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	391.62	15	\$86.72	15%	35%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	12,168.55	20	\$14,616.50	100%	at stock turnover	\$0.13	2	2	BEST Simulation
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$38,943.44	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	410.54	3	\$875.36	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	38.72	32	\$14,653.59	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	150.44	15	\$41.50	15%	35%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	7,177.51	20	\$9,202.79	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	35,626.76	23	\$58,438.99	2%	at stock turnover	\$0.17	7	7	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	19,576.05	23	\$7,955.30	6%	at stock turnover	\$0.04	9	9	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,275.83	10	\$530.77	15%	45%	\$0.01	2	2	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,609.85	15	\$236.80	15%	60%	\$0.02	1	1	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	468.24	15	\$93.95	15%	75%	\$0.02	0	0	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	16,951.04	15	\$82,222.15	15%	50%	\$0.49	12	13	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	14,979.08	12	\$6,298.44	15%	50%	\$0.05	10	13	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	Existing	4,434.09	15	\$7,989.59	20%	50%	\$0.04	3	3	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	34,386.23	23	\$52,638.14	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	14,451.90	18	\$4,038.79	15%	75%	\$0.02	3	3	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	906.30	18	\$383.63	15%	25%	\$0.02	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	HVAC - Economizer	per Facility	Existing	5,989.74	10	\$2,598.23	18%	30%	\$0.02	2	1	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,934.97	45	\$32,898.89	15%	25%	\$0.04	2	2	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,612.80	20	\$622.62	15%	25%	\$0.02	1	1	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	843.21	45	\$4,386.89	45%	50%	\$0.01	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	27,913.78	23	\$59,959.71	5%	at stock turnover	\$0.22	2	2	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	Existing	4,059.85	3	\$620.11	0%	18%	\$0.01	1	2	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$43.68	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,376.79	10	\$807.70	15%	24%	\$0.01	0	0	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	28,573.20	23	\$12,036.71	3%	at stock turnover	\$0.04	7	7	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,021.24	10	\$533.59	15%	45%	\$0.01	1	1	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,704.21	4	\$322.60	15%	50%	\$0.01	1	2	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,917.42	15	\$293.02	15%	60%	\$0.02	0	0	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	409.10	15	\$85.38	15%	75%	\$0.02	0	0	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	27,216.08	23	\$44,383.29	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,485.47	23	\$39,549.55	6%	at stock turnover	\$2.77	0	0	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,928.84	10	\$563.58	15%	45%	\$0.01	0	0	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,080.70	15	\$157.90	15%	60%	\$0.02	0	0	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$580.09	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,397.49	15	\$82,222.15	15%	50%	\$1.10	1	1	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	8,795.15	12	\$4,305.27	15%	50%	\$0.06	1	1	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	New	2,615.68	15	\$6,505.14	20%	50%	\$0.04	0	0	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	26,248.89	23	\$39,977.65	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	9,466.94	18	\$3,010.91	15%	75%	\$0.02	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	786.60	18	\$260.52	15%	25%	\$0.02	0	0	BEST Simulation
Food Mfg	Cooling	HVAC - Economizer	per Facility	New	3,430.79	10	\$1,614.24	18%	30%	\$0.02	0	0	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	547.25	45	\$24,040.36	15%	25%	\$0.03	0	0	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,545.92	20	\$180.79	15%	25%	\$0.05	0	0	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	88.75	45	\$2,683.61	45%	50%	\$0.01	0	0	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	New	2,380.74	3	\$532.12	0%	18%	\$0.01	0	0	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$117.04	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	New	204.36	32	\$2,474.29	15%	52%	\$0.08	0	0	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	18,609.31	23	\$9,125.46	3%	at stock turnover	\$0.05	1	1	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,337.66	10	\$347.05	15%	45%	\$0.01	0	0	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,749.72	4	\$208.79	15%	50%	\$0.01	0	0	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	704.51	15	\$129.37	15%	60%	\$0.02	0	0	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$1,146.49	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	134.35	15	\$7,989.59	20%	50%	\$0.04	1	2	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	442.89	5	\$19.44	15%	25%	\$0.01	1	2	Illinois TRM
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	173.86	10	\$45.56	33%	60%	\$0.03	1	3	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,339.60	10	\$311.31	15%	30%	\$0.01	10	19	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	52	56	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	26	29	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	37	75	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$620.11	0%	18%	\$0.01	1	1	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	43.89	10	\$807.70	15%	24%	\$0.01	0	0	6th Plan
Food Mfg	Exterior Lighting	Energy Management System	per Facility	New	122.04	15	\$6,505.14	20%	50%	\$0.04	0	0	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	401.15	5	\$19.33	15%	25%	\$0.01	0	0	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.24	10	\$27.90	44%	60%	\$0.01	0	0	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,119.97	10	\$309.85	15%	30%	\$0.01	1	2	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	8	10	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	4	5	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	6	11	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	2	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$532.12	0%	18%	\$0.01	0	0	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.92	32	\$2,474.29	15%	52%	\$0.08	0	0	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,999.03	23	\$64,458.23	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$6,298.44	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	Existing	16,702.09	15	\$7,989.59	20%	50%	\$0.04	15	15	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	2,904.49	18	\$4,038.79	15%	75%	\$0.02	1	1	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,704.95	18	\$383.63	15%	25%	\$0.02	1	1	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	67,408.90	45	\$32,898.89	15%	25%	\$0.04	20	20	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	799.38	20	\$622.62	15%	25%	\$0.02	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	25,341.47	45	\$4,386.89	45%	50%	\$0.01	4	4	BEST Simulation
Food Mfg	Heating	Strategic Energy Management	per Facility	Existing	14,743.78	3	\$620.11	0%	18%	\$0.01	8	8	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$43.68	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	5,071.47	10	\$807.70	15%	24%	\$0.01	1	1	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,705.76	23	\$56,842.06	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$4,305.27	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	New	16,024.88	15	\$6,505.14	20%	50%	\$0.04	2	2	BEST Simulation
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,585.73	23	\$37,676.25	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	New	1,810.40	18	\$3,010.91	15%	75%	\$0.02	0	0	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	867.48	18	\$260.52	15%	25%	\$0.02	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	64,900.74	45	\$24,040.36	15%	25%	\$0.03	2	2	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,344.89	20	\$180.79	15%	25%	\$0.05	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	18,214.18	45	\$2,683.61	45%	50%	\$0.01	0	0	BEST Simulation
Food Mfg	Heating	Strategic Energy Management	per Facility	New	14,159.99	3	\$532.12	0%	18%	\$0.01	1	1	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$117.04	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,302.22	32	\$2,474.29	15%	52%	\$0.08	0	0	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	Existing	762.93	15	\$7,989.59	20%	50%	\$0.04	6	10	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	400	452	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,943.60	5	\$131.99	5%	40%	\$0.01	10	18	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,800.31	5	\$175.98	15%	50%	\$0.01	12	24	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,762.30	12	\$1,183.28	3%	25%	\$0.02	28	56	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	823.52	16	\$21.74	1%	3%	\$0.00	0	1	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,277.04	10	\$780.11	7%	60%	\$0.02	57	106	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$12,853.74	15%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,828.07	8	\$102.31	7%	15%	\$0.01	4	8	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	283.34	5	\$5.54	10%	25%	\$0.00	0	1	AEG research & analysis
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	42	84	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	4	12	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	788.07	3	\$620.11	0%	18%	\$0.01	4	8	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	264.00	10	\$807.70	15%	24%	\$0.01	1	1	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	New	711.57	15	\$6,505.14	20%	50%	\$0.04	1	1	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	61	74	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,371.05	5	\$131.88	5%	40%	\$0.01	1	1	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,302.42	5	\$175.77	15%	50%	\$0.01	1	2	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,434.54	12	\$1,112.32	4%	25%	\$0.02	3	5	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	740.15	16	\$21.74	1%	3%	\$0.00	0	0	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,760.53	10	\$801.84	22%	60%	\$0.02	4	6	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$12,853.74	18%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,635.40	8	\$99.59	7%	15%	\$0.01	0	1	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.42	5	\$5.43	10%	25%	\$0.00	0	0	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	31	37	AEO 2013
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	7	13	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	1	2	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	712.06	3	\$532.12	0%	18%	\$0.01	0	1	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	57.82	32	\$2,474.29	15%	52%	\$0.08	0	0	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$13.06	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,902.38	3	\$611.23	10%	37%	\$0.02	22	22	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,532.93	3	\$620.11	0%	18%	\$0.01	13	13	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	871.26	10	\$807.70	15%	24%	\$0.01	2	2	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$13.06	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	New	2,908.53	3	\$611.23	10%	37%	\$0.02	2	2	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,532.93	3	\$532.12	0%	18%	\$0.01	1	1	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	236.51	32	\$2,474.29	15%	52%	\$0.08	0	0	6th Plan
Food Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	9,046.59	10	\$63.12	15%	75%	\$0.00	78	79	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	9,230.48	15	\$1,222.05	15%	50%	\$0.01	44	49	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,352.66	15	\$177.13	15%	38%	\$0.01	7	8	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	275.32	5	\$10.87	15%	50%	\$0.01	1	1	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	4,301.71	20	\$761.19	15%	50%	\$0.02	20	23	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,355.77	15	\$178.49	15%	38%	\$0.01	7	8	MI - TRM
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	4,932.00	10	\$396.17	15%	50%	\$0.01	24	26	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$783.76	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	4,125.13	15	\$419.78	8%	38%	\$0.01	17	18	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,268.15	3	\$44.83	8%	38%	\$0.01	10	10	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	6,365.60	15	\$671.74	8%	38%	\$0.01	26	29	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$209.00	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	23,823.18	10	\$709.46	8%	38%	\$0.00	102	103	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	Existing	8,021.59	15	\$206.91	8%	38%	\$0.00	35	35	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	Existing	4,108.07	3	\$58.83	8%	38%	\$0.01	17	18	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	12,259.05	10	\$529.72	8%	38%	\$0.01	51	53	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	919.00	8	\$289.26	10%	50%	\$0.05	20	22	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	652.04	8	\$102.52	5%	25%	\$0.03	7	8	Developed from RTF
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$82.14	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$561.28	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$2.09	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	16,662.65	17	\$260.84	5%	6%	\$0.00	10	10	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,598.97	10	\$122.58	15%	36%	\$0.01	31	32	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	15,968.30	17	\$1,883.13	25%	44%	\$0.01	170	175	RSMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$752.10	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$363.56	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	11,041.03	10	\$479.46	8%	38%	\$0.01	47	48	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Pumping System - Controls	per Facility	Existing	11,152.99	15	\$584.58	8%	38%	\$0.01	48	48	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	5,776.97	3	\$166.26	8%	38%	\$0.01	24	25	Scaled from Optimization
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	17,945.89	12	\$1,623.86	8%	38%	\$0.01	76	78	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	Existing	6,282.48	3	\$611.23	10%	37%	\$0.02	94	98	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	Existing	5,666.74	3	\$620.11	0%	18%	\$0.01	58	61	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$210.99	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	1,930.95	10	\$807.70	15%	24%	\$0.01	10	10	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$212.66	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Commissioning	per Facility	New	5,545.14	3	\$611.23	10%	37%	\$0.02	13	13	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	9,046.59	10	\$63.12	15%	75%	\$0.00	9	9	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	9,285.40	15	\$1,222.05	15%	50%	\$0.01	5	5	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,366.35	15	\$177.13	15%	38%	\$0.01	1	1	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	277.11	5	\$10.87	15%	50%	\$0.01	0	0	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	4,335.72	20	\$761.19	15%	50%	\$0.02	3	3	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,370.29	15	\$178.49	15%	38%	\$0.01	1	1	MI - TRM
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	4,787.74	10	\$396.17	15%	50%	\$0.01	3	3	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$783.76	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	New	4,091.62	15	\$419.78	8%	38%	\$0.01	2	2	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	2,265.67	3	\$44.83	8%	38%	\$0.01	1	1	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	6,456.13	15	\$671.74	8%	38%	\$0.01	3	3	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$209.00	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	23,725.34	10	\$709.46	8%	38%	\$0.00	12	12	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Fan System - Controls	per Facility	New	8,019.87	15	\$206.91	8%	38%	\$0.00	4	4	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	New	4,042.17	3	\$58.83	8%	38%	\$0.01	2	2	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	12,036.92	10	\$529.72	8%	38%	\$0.01	6	6	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	809.18	8	\$289.26	10%	50%	\$0.06	3	3	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	574.14	8	\$102.52	5%	25%	\$0.03	1	1	Developed from RTF
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$82.14	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$561.28	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$2.09	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	14,797.02	17	\$260.84	5%	6%	\$0.00	1	1	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,301.11	10	\$122.58	15%	36%	\$0.01	4	4	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	14,326.81	17	\$1,129.88	25%	44%	\$0.01	23	23	RSMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$752.10	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$363.56	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	11,150.61	10	\$479.46	8%	38%	\$0.01	6	6	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	New	10,995.69	15	\$584.58	8%	38%	\$0.01	6	6	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	New	5,656.22	3	\$166.26	8%	38%	\$0.01	3	3	Scaled from Optimization
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	17,545.05	12	\$1,623.86	8%	38%	\$0.01	9	9	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	New	5,013.47	3	\$532.12	0%	18%	\$0.01	8	8	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$210.99	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	New	449.82	32	\$2,474.29	15%	52%	\$0.08	1	1	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$212.66	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$149.02	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$1.67	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$7.94	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$9.51	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$1,200.52	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$6.06	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$293.86	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$32.60	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$298.67	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$15.47	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$4.60	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$26.86	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$920.45	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,019.63	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$17.45	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$841.76	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$7,660.31	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	Existing	109.83	5	\$6.79	15%	75%	\$0.02	1	1	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,088.75	10	\$136.90	15%	75%	\$0.02	9	9	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	Existing	2,289.20	5	\$742.17	15%	75%	\$0.08	97	99	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	8,539.82	15	\$966.54	15%	50%	\$0.01	43	44	Developed from RTF
Food Mfg	Process	Refrigeration - System Controls	per Facility	Existing	16,844.83	18	\$2,319.63	15%	50%	\$0.01	84	87	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	5,913.10	3	\$128.85	15%	50%	\$0.01	30	30	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	17,564.73	15	\$1,932.97	15%	50%	\$0.01	88	90	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	Existing	1,340.18	3	\$611.23	10%	37%	\$0.02	129	26	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	Existing	3,465.30	3	\$620.11	0%	18%	\$0.01	45	45	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	Existing	1,187.88	10	\$807.70	15%	24%	\$0.01	8	8	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$149.02	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$1.67	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$7.94	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$9.51	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Commissioning	per Facility	New	2,068.25	3	\$611.23	10%	37%	\$0.02	15	10	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$1,200.52	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$6.06	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$293.86	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$32.60	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$298.67	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$15.47	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$4.60	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$26.86	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$920.45	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,019.63	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$17.45	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$841.76	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$7,660.31	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$6.79	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$136.90	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	New	2,781.16	5	\$742.17	15%	75%	\$0.06	11	11	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	8,806.10	15	\$966.54	15%	50%	\$0.01	5	5	Developed from RTF
Food Mfg	Process	Refrigeration - System Controls	per Facility	New	16,933.75	18	\$2,319.63	15%	50%	\$0.01	10	10	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	New	5,921.92	3	\$128.85	15%	50%	\$0.01	3	3	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	17,383.97	15	\$1,932.97	15%	50%	\$0.01	10	10	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	New	4,211.82	3	\$532.12	0%	18%	\$0.01	5	5	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	New	375.88	32	\$2,474.29	15%	52%	\$0.08	1	1	6th Plan
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$6,298.44	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	515.08	3	\$620.11	0%	18%	\$0.01	1	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	177.18	10	\$807.70	15%	24%	\$0.01	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	189.25	15	\$9.61	15%	35%	\$0.01	0	1	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,870.25	20	\$7,051.18	100%	at stock turnover	\$0.13	10	10	BEST Simulation
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$4,305.27	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	New	198.05	3	\$532.12	0%	18%	\$0.01	0	0	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	18.61	32	\$2,474.29	15%	52%	\$0.08	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	72.32	15	\$4.60	15%	35%	\$0.01	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,462.52	20	\$4,439.54	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	49,490.60	23	\$81,180.01	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	27,193.89	23	\$11,051.03	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,548.76	10	\$3,217.68	15%	45%	\$0.04	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,246.50	15	\$1,435.57	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	653.42	15	\$569.22	15%	75%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	23,654.23	15	\$532,535.50	15%	50%	\$2.27	0	0	BEST Simulation
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	Existing	20,902.66	12	\$38,179.71	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	Existing	6,187.59	15	\$47,753.57	20%	50%	\$0.18	0	0	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	47,767.33	23	\$73,121.80	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	Existing	20,167.21	18	\$24,481.88	15%	75%	\$0.10	0	0	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,264.72	18	\$2,324.94	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	Existing	8,358.48	10	\$15,734.43	18%	30%	\$0.08	0	0	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	15,259.33	45	\$199,423.31	15%	25%	\$0.16	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,646.07	20	\$3,774.04	15%	25%	\$0.08	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,176.68	45	\$26,592.26	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	Existing	38,776.18	23	\$83,292.50	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	Existing	5,639.71	3	\$763.47	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$565.16	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	Existing	1,921.27	10	\$3,541.89	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	39,692.21	23	\$16,720.69	3%	at stock turnover	\$0.04	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,193.30	10	\$3,234.60	15%	45%	\$0.04	0	0	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,937.38	4	\$1,955.38	15%	50%	\$0.03	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,675.67	15	\$1,776.02	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	570.87	15	\$517.10	15%	75%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	37,806.98	23	\$61,654.66	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	2,063.53	23	\$12,137,221.97	6%	at stock turnover	\$612.24	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	12,446.76	10	\$3,416.00	15%	45%	\$0.04	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,506.48	15	\$957.05	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$7,514.25	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	10,311.84	15	\$532,535.50	15%	50%	\$5.13	0	0	BEST Simulation
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	New	12,260.21	12	\$26,097.49	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	New	3,646.20	15	\$38,758.41	20%	50%	\$0.16	0	0	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	36,463.41	23	\$55,534.60	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	New	13,196.68	18	\$18,251.59	15%	75%	\$0.11	0	0	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,096.50	18	\$1,579.74	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	New	4,782.46	10	\$9,785.04	18%	30%	\$0.09	0	0	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	New	762.85	45	\$145,725.08	15%	25%	\$0.14	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	New	2,154.97	20	\$1,095.80	15%	25%	\$0.20	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	123.72	45	\$16,267.78	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	New	23,064.58	23	\$49,305.63	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	New	3,307.19	3	\$615.25	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,516.12	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	New	284.88	32	\$10,301.46	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	25,850.96	23	\$12,676.56	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,046.56	10	\$2,103.61	15%	45%	\$0.04	0	0	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	8,014.97	4	\$1,265.69	15%	50%	\$0.04	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	982.06	15	\$783.78	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$14,851.16	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$47,753.57	20%	50%	\$0.18	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$84.60	15%	25%	\$0.03	0	0	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$198.99	33%	60%	\$0.11	0	0	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,358.41	15%	30%	\$0.06	0	0	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	1	1	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	1	1	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	1	2	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	82.35	15	-\$14.38	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$763.47	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$3,541.89	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$38,758.41	20%	50%	\$0.16	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$84.60	15%	25%	\$0.03	0	0	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$121.83	44%	60%	\$0.06	0	0	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,352.32	15%	30%	\$0.06	0	0	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	30.43	15	\$4.06	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$615.25	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$10,301.46	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,944.36	23	\$89,541.58	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$38,179.71	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	Existing	23,307.70	15	\$47,753.57	20%	50%	\$0.18	0	0	BEST Simulation
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,960.66	23	\$68,912.39	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	Existing	4,053.19	18	\$24,481.88	15%	75%	\$0.10	0	0	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,379.25	18	\$2,324.94	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	Existing	94,069.03	45	\$199,423.31	15%	25%	\$0.16	1	1	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,115.53	20	\$3,774.04	15%	25%	\$0.08	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	35,364.01	45	\$26,592.26	45%	50%	\$0.06	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Heating	Strategic Energy Management	per Facility	Existing	20,481.19	3	\$763.47	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$565.16	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	Existing	7,077.24	10	\$3,541.89	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	10,704.39	23	\$78,961.64	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$26,097.49	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	New	22,338.57	15	\$38,758.41	20%	50%	\$0.16	0	0	BEST Simulation
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,759.37	23	\$52,337.62	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	New	2,523.68	18	\$18,251.59	15%	75%	\$0.11	0	0	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,209.27	18	\$1,579.74	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	New	90,471.38	45	\$145,725.08	15%	25%	\$0.14	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	New	-1,874.76	20	\$1,095.80	15%	25%	\$0.20	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	New	25,390.51	45	\$16,267.78	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	New	19,670.23	3	\$615.25	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,516.12	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	New	1,815.28	32	\$10,301.46	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$47,753.57	20%	50%	\$0.18	0	0	BEST Simulation
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	9	10	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,956.82	5	\$575.99	5%	40%	\$0.03	0	0	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.34	5	\$768.21	15%	50%	\$0.03	0	0	1 Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,163.59	3%	25%	\$0.10	1	1	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	822.11	16	\$94.76	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,403.81	7%	60%	\$0.07	1	2	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$83,250.97	15%	30%	\$10.00	0	0	DEER

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Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$446.04	7%	15%	\$0.03	0	0	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	282.87	5	\$24.37	10%	25%	\$0.01	0	0	AEG research & analysis
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	5	5	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	1	2	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$763.47	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$3,541.89	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$38,758.41	20%	50%	\$0.16	0	0	BEST Simulation
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	1	2	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,485.37	5	\$575.31	5%	40%	\$0.04	0	0	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,207.67	5	\$766.86	15%	50%	\$0.04	0	0	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$4,853.60	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.17	16	\$94.76	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,499.25	22%	60%	\$0.07	0	0	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$83,250.97	18%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$434.53	7%	15%	\$0.03	0	0	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.13	5	\$23.69	10%	25%	\$0.01	0	0	AEG research & analysis
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	1	1	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	New	712.73	3	\$615.25	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$10,301.46	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$169.21	0%	0%	\$10.00	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	Existing	2,124.94	3	\$1,099.86	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,846.00	3	\$763.47	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	637.88	10	\$3,541.89	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$169.21	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	New	2,127.15	3	\$1,099.86	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	New	1,846.00	3	\$615.25	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	New	172.60	32	\$10,301.46	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	9,117.74	10	\$277.50	15%	75%	\$0.00	2	2	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	9,345.35	15	\$5,374.76	15%	50%	\$0.06	1	1	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,367.15	15	\$779.04	15%	38%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	278.75	5	\$48.06	15%	50%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	4,355.21	20	\$3,347.64	15%	50%	\$0.07	0	1	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,399.96	15	\$785.13	15%	38%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	5,064.39	10	\$1,742.18	15%	50%	\$0.05	1	1	VT - TRM
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,538.14	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	Existing	4,087.58	15	\$1,846.41	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,282.00	3	\$196.96	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and	per Facility	Existing	6,444.86	15	\$2,954.39	8%	38%	\$0.05	1	1	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
		Improvements - Optimized System											
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$676.84	15%	50%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	15,862.72	10	\$2,065.03	8%	38%	\$0.02	2	2	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	Existing	5,341.19	15	\$602.39	8%	38%	\$0.01	1	1	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	Existing	2,735.37	3	\$171.24	8%	38%	\$0.02	0	0	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	8,162.74	10	\$1,541.84	8%	38%	\$0.03	1	1	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	439.31	8	\$644.35	10%	50%	\$0.23	0	0	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	311.69	8	\$228.09	5%	25%	\$0.12	0	0	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$1,063.99	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,784.82	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$6.77	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	8,051.35	17	\$581.40	5%	6%	\$0.01	0	0	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,258.61	10	\$272.77	15%	36%	\$0.03	0	0	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	Existing	7,695.85	17	\$4,194.36	25%	44%	\$0.06	2	2	RSMeans 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,391.94	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,156.04	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	2,272.00	10	\$431.15	8%	38%	\$0.03	0	0	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	Existing	2,295.04	15	\$525.90	8%	38%	\$0.03	0	0	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	Existing	1,195.56	3	\$149.58	8%	38%	\$0.05	0	0	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	3,716.25	12	\$1,460.61	8%	38%	\$0.05	0	0	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	Existing	3,007.77	3	\$1,099.86	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	Existing	2,789.58	3	\$763.47	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$670.75	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	Existing	938.51	10	\$3,541.89	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$413.55	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	New	2,800.94	3	\$1,099.86	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	New	9,117.74	10	\$277.50	15%	75%	\$0.00	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	9,390.86	15	\$5,374.76	15%	50%	\$0.06	0	0	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,393.27	15	\$779.04	15%	38%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	276.17	5	\$48.06	15%	50%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	New	4,384.93	20	\$3,347.64	15%	50%	\$0.07	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,397.25	15	\$785.13	15%	38%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	5,020.94	10	\$1,742.18	15%	50%	\$0.05	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,538.14	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	New	4,057.18	15	\$1,846.41	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	New	2,291.44	3	\$196.96	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	6,401.87	15	\$2,954.39	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$676.84	15%	50%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	15,804.09	10	\$2,065.03	8%	38%	\$0.02	0	0	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	New	5,342.25	15	\$602.39	8%	38%	\$0.01	0	0	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	New	2,692.61	3	\$171.24	8%	38%	\$0.02	0	0	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	New	8,018.15	10	\$1,541.84	8%	38%	\$0.03	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	407.85	8	\$644.35	10%	50%	\$0.25	0	0	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	289.38	8	\$228.09	5%	25%	\$0.13	0	0	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$1,063.99	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,784.82	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$6.77	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	7,501.68	17	\$581.40	5%	6%	\$0.01	0	0	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,170.70	10	\$272.77	15%	36%	\$0.03	0	0	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	New	7,281.39	17	\$2,516.48	25%	44%	\$0.04	0	0	RSMeans 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,391.94	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,156.04	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,263.61	10	\$431.15	8%	38%	\$0.03	0	0	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	New	2,295.50	15	\$525.90	8%	38%	\$0.03	0	0	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	New	1,170.03	3	\$149.58	8%	38%	\$0.05	0	0	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,629.32	12	\$1,460.61	8%	38%	\$0.05	0	0	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	New	2,604.06	3	\$615.25	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$670.75	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	New	226.72	32	\$10,301.46	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$413.55	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$134.01	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$14.21	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$65.65	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$78.51	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$15,550.33	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$50.09	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,429.85	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$270.06	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,469.10	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$31.13	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$58.88	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	Existing	0.00	10	\$347.89	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$11,922.49	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$891.39	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$15.57	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,689.39	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$6,697.98	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	Existing	180.96	5	\$48.73	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,791.11	10	\$979.38	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	Existing	468.52	5	\$649.09	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	472.35	15	\$226.06	15%	50%	\$0.06	0	0	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	Existing	905.98	18	\$542.15	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	Existing	318.03	3	\$29.78	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	931.66	15	\$451.45	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	Existing	189.14	3	\$1,099.86	5%	39%	\$0.07	1	0	Energy Management Program Design for PC

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Industrial Machinery	Process	Strategic Energy Management	per Facility	Existing	694.39	3	\$763.47	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	Existing	239.72	10	\$3,541.89	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$134.01	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$14.21	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$65.65	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$78.51	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	New	239.59	3	\$1,099.86	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$15,550.33	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$50.09	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,429.85	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$270.06	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,469.10	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$31.13	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$58.88	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	New	0.00	10	\$347.89	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	New	0.00	10	\$11,922.49	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$891.39	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$15.57	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,689.39	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$6,697.98	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$48.73	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$979.38	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	New	453.52	5	\$649.09	15%	75%	\$0.34	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	460.85	15	\$226.06	15%	50%	\$0.06	0	0	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	New	909.78	18	\$542.15	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	New	318.16	3	\$29.78	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	946.24	15	\$451.45	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	New	671.47	3	\$615.25	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	New	62.04	32	\$10,301.46	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$38,179.71	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	Existing	716.48	3	\$763.47	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	Existing	247.25	10	\$3,541.89	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	262.44	15	\$58.21	15%	35%	\$0.02	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	8,154.61	20	\$9,795.08	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$26,097.49	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	New	275.12	3	\$615.25	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	New	25.94	32	\$10,301.46	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	100.81	15	\$27.75	15%	35%	\$0.03	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,809.92	20	\$6,167.15	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	20,782.79	23	\$34,090.26	2%	at stock turnover	\$0.17	2	2	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	11,419.64	23	\$4,640.70	6%	at stock turnover	\$0.04	2	2	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	4,858.19	10	\$1,351.06	15%	45%	\$0.04	1	1	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	937.12	15	\$602.91	15%	60%	\$0.07	0	0	BEST Simulation

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Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	272.57	15	\$239.03	15%	75%	\$0.09	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	9,867.64	15	\$127,245.68	15%	50%	\$1.29	3	4	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	8,719.68	12	\$16,032.83	15%	50%	\$0.22	3	3	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	Existing	2,581.19	15	\$21,062.65	20%	50%	\$0.18	1	1	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	20,059.13	23	\$30,706.34	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	8,412.75	18	\$10,280.73	15%	75%	\$0.10	1	1	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	527.58	18	\$976.50	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	Existing	3,486.76	10	\$6,607.62	18%	30%	\$0.08	1	0	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	6,365.50	45	\$83,744.74	15%	25%	\$0.16	1	1	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	1,520.96	20	\$1,584.75	15%	25%	\$0.08	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	490.85	45	\$11,166.99	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	Existing	16,283.44	23	\$34,977.37	5%	at stock turnover	\$0.22	1	1	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	Existing	2,334.84	3	\$2,821.95	0%	24%	\$0.04	1	1	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$180.00	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	Existing	801.46	10	\$2,778.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	16,668.11	23	\$7,021.59	3%	at stock turnover	\$0.04	2	2	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	4,708.63	10	\$1,358.17	15%	45%	\$0.04	0	0	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	6,283.65	4	\$821.24	15%	50%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,116.18	15	\$745.88	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	238.15	15	\$217.36	15%	75%	\$0.09	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	15,876.44	23	\$25,890.89	2%	at stock turnover	\$0.17	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	866.55	23	\$123,628.29	6%	at stock turnover	\$14.85	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,233.82	10	\$1,434.67	15%	45%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	629.41	15	\$401.89	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,393.86	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	4,308.40	15	\$127,245.68	15%	50%	\$2.92	0	0	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	New	5,122.40	12	\$10,959.17	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	New	1,523.40	15	\$17,281.02	20%	50%	\$0.16	0	0	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	15,312.23	23	\$23,320.87	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	New	5,513.65	18	\$7,664.34	15%	75%	\$0.11	0	0	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	458.12	18	\$663.24	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	New	1,998.12	10	\$4,109.12	18%	30%	\$0.09	0	0	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	318.72	45	\$61,195.02	15%	25%	\$0.14	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	New	900.36	20	\$460.27	15%	25%	\$0.20	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	51.69	45	\$6,831.29	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	New	9,685.60	23	\$20,705.12	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	New	1,363.98	3	\$2,524.21	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$483.07	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	New	119.02	32	\$8,802.72	15%	52%	\$0.38	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	10,855.70	23	\$5,323.32	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,542.54	10	\$883.51	15%	45%	\$0.04	0	0	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	3,370.25	4	\$531.43	15%	50%	\$0.04	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	410.31	15	\$329.27	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$4,731.61	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	Existing	134.07	15	\$21,062.65	20%	50%	\$0.18	0	1	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	445.63	5	\$84.91	15%	25%	\$0.03	1	1	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	173.50	10	\$198.92	33%	60%	\$0.11	1	1	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,334.77	10	\$1,358.66	15%	30%	\$0.06	4	9	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	24	26	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	12	13	AEO 2013
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	17	34	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	83.09	15	\$3.57	100%	at stock turnover	\$0.05	2	5	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	127.58	3	\$2,821.95	0%	24%	\$0.04	0	1	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	43.80	10	\$2,778.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	New	121.85	15	\$17,281.02	20%	50%	\$0.16	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	403.06	5	\$84.58	15%	25%	\$0.03	0	0	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	163.98	10	\$121.94	44%	60%	\$0.06	0	0	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,116.61	10	\$1,352.19	15%	30%	\$0.06	1	1	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	4	4	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	2	2	AEO 2013
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	3	5	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	New	115.38	3	\$2,524.21	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.90	32	\$8,802.72	15%	52%	\$0.38	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	2,916.17	23	\$37,601.57	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$16,032.83	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	Existing	9,722.55	15	\$21,062.65	20%	50%	\$0.18	4	4	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	823.35	23	\$28,938.66	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	Existing	1,690.75	18	\$10,280.73	15%	75%	\$0.10	0	0	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	992.48	18	\$976.50	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	39,239.77	45	\$83,744.74	15%	25%	\$0.16	5	5	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	465.33	20	\$1,584.75	15%	25%	\$0.08	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	14,751.66	45	\$11,166.99	45%	50%	\$0.06	1	1	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	Existing	8,600.75	3	\$2,821.95	0%	24%	\$0.04	3	3	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$180.00	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	Existing	2,952.18	10	\$2,778.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	4,495.14	23	\$33,158.69	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$10,959.17	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	New	9,333.01	15	\$17,281.02	20%	50%	\$0.16	0	0	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	3,258.42	23	\$21,978.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	New	1,054.39	18	\$7,664.34	15%	75%	\$0.11	0	0	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	505.23	18	\$663.24	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	New	37,798.63	45	\$61,195.02	15%	25%	\$0.14	1	1	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	New	-783.27	20	\$460.27	15%	25%	\$0.20	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	10,608.06	45	\$6,831.29	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	New	8,260.20	3	\$2,524.21	0%	24%	\$0.04	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$483.07	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	New	758.42	32	\$8,802.72	15%	52%	\$0.38	0	0	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	Existing	761.36	15	\$21,062.65	20%	50%	\$0.18	3	4	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	182	206	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,961.91	5	\$575.90	5%	40%	\$0.03	4	8	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,823.90	5	\$767.87	15%	50%	\$0.03	6	11	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,752.48	12	\$5,163.25	3%	25%	\$0.10	13	25	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	823.18	16	\$95.09	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,266.08	10	\$3,403.84	7%	60%	\$0.07	26	48	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$19,892.25	15%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,828.07	8	\$446.20	7%	15%	\$0.03	2	4	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	283.52	5	\$24.10	10%	25%	\$0.01	0	0	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	92	101	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	19	38	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	2	6	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	767.41	3	\$2,821.95	0%	24%	\$0.04	2	5	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	263.45	10	\$2,778.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	New	710.45	15	\$17,281.02	20%	50%	\$0.16	0	1	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	28	34	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,488.66	5	\$575.42	5%	40%	\$0.04	0	1	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,211.91	5	\$767.23	15%	50%	\$0.04	1	1	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,427.53	12	\$4,853.71	4%	25%	\$0.09	2	2	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	740.15	16	\$94.61	1%	3%	\$0.01	0	0	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,752.96	10	\$3,499.09	22%	60%	\$0.07	2	3	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$19,892.25	18%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,643.22	8	\$434.39	7%	15%	\$0.03	0	0	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.42	5	\$23.94	10%	25%	\$0.01	0	0	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	14	17	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	New	690.91	3	\$2,524.21	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	57.73	32	\$8,802.72	15%	52%	\$0.38	0	0	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$53.85	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	Existing	2,703.24	3	\$2,129.28	10%	35%	\$0.05	9	9	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,364.13	3	\$2,821.95	0%	24%	\$0.04	7	7	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	811.48	10	\$2,778.45	15%	24%	\$0.05	1	1	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$53.85	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	New	2,710.32	3	\$2,129.28	10%	35%	\$0.06	1	1	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	New	2,364.13	3	\$2,524.21	0%	24%	\$0.04	1	1	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	220.53	32	\$8,802.72	15%	52%	\$0.38	0	0	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	21,032.22	10	\$640.27	15%	75%	\$0.00	83	83	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	21,299.19	15	\$12,397.88	15%	50%	\$0.06	46	52	OH - TRM
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	5,469.92	15	\$1,797.26	15%	38%	\$0.04	8	8	MI - TRM

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Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	644.13	5	\$110.46	15%	50%	\$0.04	1	2	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	9,926.66	20	\$7,722.23	15%	50%	\$0.07	21	24	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	5,545.75	15	\$1,810.84	15%	38%	\$0.04	8	8	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	11,604.72	10	\$4,019.20	15%	50%	\$0.05	26	28	VT - TRM
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$808.63	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	Existing	9,148.25	15	\$4,259.04	8%	38%	\$0.05	17	19	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	5,258.72	3	\$454.29	8%	38%	\$0.03	10	11	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	14,986.39	15	\$6,814.47	8%	38%	\$0.05	28	31	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$215.58	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	25,691.48	10	\$3,338.50	8%	38%	\$0.02	50	51	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	Existing	8,650.67	15	\$973.75	8%	38%	\$0.01	17	17	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	Existing	4,430.24	3	\$277.04	8%	38%	\$0.02	8	9	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	13,220.44	10	\$2,492.84	8%	38%	\$0.03	25	26	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,479.07	8	\$2,036.93	10%	50%	\$0.21	14	16	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,049.41	8	\$722.10	5%	25%	\$0.11	5	6	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$338.98	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,198.01	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$8.41	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	26,604.62	17	\$1,837.20	5%	6%	\$0.01	7	7	E3T Website
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	4,219.82	10	\$863.13	15%	36%	\$0.03	22	24	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	25,610.74	17	\$13,261.98	25%	44%	\$0.05	119	128	RSMeans 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,945.35	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,423.83	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$767.23	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$935.42	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$266.04	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$2,598.28	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	Existing	10,300.34	3	\$2,129.28	10%	35%	\$0.05	63	68	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	Existing	9,087.79	3	\$2,821.95	0%	24%	\$0.04	54	61	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$826.26	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	Existing	3,119.45	10	\$2,778.45	15%	24%	\$0.05	7	8	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	173,424.70	10	\$2,514.67	15%	75%	\$0.00	682	682	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	New	8,453.05	3	\$2,129.28	10%	35%	\$0.06	8	8	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	21,032.22	10	\$640.27	15%	75%	\$0.00	10	10	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	21,387.99	15	\$12,397.88	15%	50%	\$0.06	6	6	OH - TRM
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	5,528.02	15	\$1,797.26	15%	38%	\$0.04	1	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	637.91	5	\$110.46	15%	50%	\$0.04	0	0	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	9,987.13	20	\$7,722.23	15%	50%	\$0.07	3	3	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	5,537.20	15	\$1,810.84	15%	38%	\$0.04	1	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	11,523.32	10	\$4,019.20	15%	50%	\$0.05	3	3	VT - TRM
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$808.63	15%	30%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	New	9,311.49	15	\$4,259.04	8%	38%	\$0.05	2	2	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	New	5,292.82	3	\$454.29	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	14,692.77	15	\$6,814.47	8%	38%	\$0.05	3	3	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$215.58	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	25,585.97	10	\$3,338.50	8%	38%	\$0.02	6	6	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	New	8,648.82	15	\$973.75	8%	38%	\$0.01	2	2	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	New	4,359.17	3	\$277.04	8%	38%	\$0.02	1	1	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	12,980.90	10	\$2,492.84	8%	38%	\$0.03	3	3	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,224.44	8	\$2,036.93	10%	50%	\$0.25	2	2	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	868.78	8	\$722.10	5%	25%	\$0.13	1	1	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$338.98	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,198.01	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$8.41	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	22,215.14	17	\$1,837.20	5%	6%	\$0.01	1	1	E3T Website
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	3,503.61	10	\$863.13	15%	36%	\$0.03	3	3	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	New	21,802.75	17	\$7,957.22	25%	44%	\$0.04	16	16	RSMeans 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,945.35	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,423.83	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	4,031.80	10	\$767.23	8%	38%	\$0.03	1	1	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	New	4,088.61	15	\$935.42	8%	38%	\$0.03	1	1	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	New	2,070.63	3	\$266.04	8%	38%	\$0.05	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	6,422.92	12	\$2,598.28	8%	38%	\$0.05	1	1	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	New	7,446.83	3	\$2,524.21	0%	24%	\$0.04	7	7	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$826.26	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	New	680.67	32	\$8,802.72	15%	52%	\$0.38	1	1	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	173,424.70	10	\$2,514.67	15%	75%	\$0.00	79	79	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$238.38	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$23.13	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$109.00	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$130.03	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,954.14	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$83.29	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$4,020.82	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$446.52	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$4,086.48	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$79.25	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$18.76	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$110.78	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,798.45	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,494.18	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$25.55	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$4,301.74	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$11,225.21	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	Existing	63.48	5	\$17.47	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	633.10	10	\$347.87	15%	75%	\$0.08	2	2	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	Existing	788.87	5	\$1,087.60	15%	75%	\$0.33	15	16	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	447.49	15	\$217.84	15%	50%	\$0.06	1	1	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	Existing	858.38	18	\$522.70	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	Existing	307.26	3	\$29.11	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	882.65	15	\$435.53	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	Existing	296.29	3	\$2,129.28	10%	35%	\$0.05	12	2	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	Existing	1,163.08	3	\$2,821.95	0%	24%	\$0.04	9	9	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	Existing	399.22	10	\$2,778.45	15%	24%	\$0.05	1	1	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$238.38	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$23.13	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$109.00	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$130.03	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	New	416.49	3	\$2,129.28	10%	35%	\$0.06	1	1	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,954.14	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$83.29	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$4,020.82	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$446.52	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$4,086.48	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$79.25	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$18.76	0%	0%	\$10.00	0	0	OPA - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Heat Lamps	per Facility	New	0.00	10	\$110.78	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,798.45	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,494.18	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$25.55	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$4,301.74	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$11,225.21	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	New	63.51	5	\$17.47	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	632.74	10	\$347.87	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	New	929.65	5	\$1,087.60	15%	75%	\$0.28	2	2	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	446.97	15	\$217.84	15%	50%	\$0.06	0	0	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	New	859.54	18	\$522.70	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	New	307.26	3	\$29.11	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	882.37	15	\$435.53	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	New	1,370.68	3	\$2,524.21	0%	24%	\$0.04	1	1	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	New	125.64	32	\$8,802.72	15%	52%	\$0.38	0	0	6th Plan
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$16,032.83	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	Existing	300.47	3	\$2,821.95	0%	24%	\$0.04	0	1	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	103.14	10	\$2,778.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	110.40	15	\$24.42	15%	35%	\$0.02	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	3,424.40	20	\$4,113.29	100%	at stock turnover	\$0.13	3	3	BEST Simulation
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$10,959.17	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	New	115.31	3	\$2,524.21	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	New	10.84	32	\$8,802.72	15%	52%	\$0.38	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	42.39	15	\$11.64	15%	35%	\$0.03	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,019.85	20	\$2,589.79	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	33,469.54	23	\$54,900.48	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	18,390.71	23	\$7,473.60	6%	at stock turnover	\$0.04	1	1	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,810.20	10	\$2,175.94	15%	45%	\$0.04	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,519.26	15	\$970.93	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	441.89	15	\$384.85	15%	75%	\$0.09	0	0	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	15,996.90	15	\$168,972.62	15%	50%	\$1.06	1	1	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	14,136.07	12	\$25,820.08	15%	50%	\$0.22	1	1	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	Existing	4,184.55	15	\$32,857.96	20%	50%	\$0.18	0	0	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	32,304.12	23	\$49,450.87	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	13,638.70	18	\$16,556.65	15%	75%	\$0.10	0	0	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	855.30	18	\$1,572.47	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	Existing	5,652.68	10	\$10,641.11	18%	30%	\$0.08	0	0	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,319.59	45	\$134,866.26	15%	25%	\$0.16	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,465.77	20	\$2,552.20	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	795.77	45	\$17,983.73	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	26,223.59	23	\$56,329.12	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Metal Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,814.03	3	\$651.15	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$179.32	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,299.32	10	\$3,046.58	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	26,843.08	23	\$11,307.88	3%	at stock turnover	\$0.04	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,569.81	10	\$2,187.32	15%	45%	\$0.04	0	0	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,101.86	4	\$1,322.49	15%	50%	\$0.03	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,809.51	15	\$1,201.15	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	386.07	15	\$349.84	15%	75%	\$0.09	0	0	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	25,568.13	23	\$41,695.86	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,395.52	23	\$1,334,458.33	6%	at stock turnover	\$99.54	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,417.51	10	\$2,310.38	15%	45%	\$0.04	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,018.80	15	\$647.28	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,384.26	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	6,973.70	15	\$168,972.62	15%	50%	\$2.40	0	0	BEST Simulation
Metal Mfg	Cooling	De-stratification Fans (HVLS)	per Facility	New	8,291.35	12	\$17,649.35	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	New	2,465.85	15	\$26,772.32	20%	50%	\$0.16	0	0	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	24,659.50	23	\$37,556.98	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	8,924.66	18	\$12,343.08	15%	75%	\$0.11	0	0	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	741.54	18	\$1,068.21	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	New	3,234.29	10	\$6,617.59	18%	30%	\$0.09	0	0	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	515.90	45	\$98,551.11	15%	25%	\$0.14	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,457.36	20	\$741.13	15%	25%	\$0.20	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	83.67	45	\$11,001.26	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	New	15,598.13	23	\$33,344.45	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Metal Mfg	Cooling	Strategic Energy Management	per Facility	New	2,236.59	3	\$551.07	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$481.06	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	New	192.66	32	\$9,224.99	15%	52%	\$0.36	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	17,482.50	23	\$8,572.91	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,089.18	10	\$1,422.78	15%	45%	\$0.04	0	0	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,420.37	4	\$855.82	15%	50%	\$0.04	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	664.15	15	\$530.24	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$4,712.25	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$32,857.96	20%	50%	\$0.18	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$84.83	15%	25%	\$0.03	0	0	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$198.87	33%	60%	\$0.11	0	0	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,358.57	15%	30%	\$0.06	1	2	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	6	7	AEO 2013
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	3	3	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	4	9	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$651.15	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$3,046.58	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$26,772.32	20%	50%	\$0.16	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$84.62	15%	25%	\$0.03	0	0	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$121.77	44%	60%	\$0.06	0	0	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,352.12	15%	30%	\$0.06	0	0	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	1	1	AEO 2013
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	1	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	1	1	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$551.07	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$9,224.99	15%	52%	\$0.36	0	0	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,696.33	23	\$60,555.25	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,820.08	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	Existing	15,762.55	15	\$32,857.96	20%	50%	\$0.18	2	2	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,325.96	23	\$46,604.12	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	2,741.10	18	\$16,556.65	15%	75%	\$0.10	0	0	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,609.04	18	\$1,572.47	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	63,617.07	45	\$134,866.26	15%	25%	\$0.16	2	2	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	754.41	20	\$2,552.20	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	23,916.00	45	\$17,983.73	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	Existing	13,851.03	3	\$651.15	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$179.32	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	4,786.20	10	\$3,046.58	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,239.18	23	\$53,400.24	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,649.35	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	New	15,107.15	15	\$26,772.32	20%	50%	\$0.16	0	0	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,247.51	23	\$35,394.93	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	New	1,706.72	18	\$12,343.08	15%	75%	\$0.11	0	0	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	817.81	18	\$1,068.21	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	61,184.05	45	\$98,551.11	15%	25%	\$0.14	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,267.87	20	\$741.13	15%	25%	\$0.20	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	17,171.11	45	\$11,001.26	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	New	13,302.60	3	\$551.07	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$481.06	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,227.64	32	\$9,224.99	15%	52%	\$0.36	0	0	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$32,857.96	20%	50%	\$0.18	1	1	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	48	54	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,956.82	5	\$575.98	5%	40%	\$0.03	1	2	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.34	5	\$767.98	15%	50%	\$0.03	1	3	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,163.24	3%	25%	\$0.10	3	7	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	821.76	16	\$95.14	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,403.93	7%	60%	\$0.07	7	13	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$26,415.39	15%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$446.27	7%	15%	\$0.03	1	1	CA - DEER
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	283.05	5	\$24.05	10%	25%	\$0.01	0	0	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	24	27	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	5	10	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	1	1	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$651.15	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$3,046.58	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$26,772.32	20%	50%	\$0.16	0	0	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	7	9	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,485.37	5	\$575.34	5%	40%	\$0.04	0	0	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,207.67	5	\$767.12	15%	50%	\$0.04	0	0	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$4,853.77	4%	25%	\$0.09	0	1	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.17	16	\$94.71	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,499.07	22%	60%	\$0.07	0	1	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$26,415.39	18%	30%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$434.46	7%	15%	\$0.03	0	0	CA - DEER
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.13	5	\$23.84	10%	25%	\$0.01	0	0	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	4	4	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	1	2	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	712.73	3	\$551.07	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$9,224.99	15%	52%	\$0.36	0	0	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$53.69	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,735.79	3	\$2,002.42	5%	39%	\$0.08	2	2	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,507.94	3	\$651.15	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	521.06	10	\$3,046.58	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$53.69	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	New	1,737.60	3	\$2,002.42	5%	39%	\$0.08	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,507.94	3	\$551.07	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	140.99	32	\$9,224.99	15%	52%	\$0.36	0	0	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	2,535.86	10	\$77.10	15%	75%	\$0.00	3	3	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	2,599.17	15	\$1,494.72	15%	50%	\$0.06	1	2	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	662.49	15	\$216.69	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	77.53	5	\$13.32	15%	50%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,211.29	20	\$930.98	15%	50%	\$0.07	1	1	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	663.36	15	\$218.41	15%	38%	\$0.04	0	0	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,408.53	10	\$484.50	15%	50%	\$0.05	1	1	VT - TRM
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$805.35	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	1,136.85	15	\$513.49	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	632.94	3	\$54.76	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	1,792.47	15	\$821.67	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$214.76	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	11,270.77	10	\$1,467.24	8%	38%	\$0.02	6	6	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	Existing	3,795.02	15	\$428.02	8%	38%	\$0.01	2	2	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,943.54	3	\$121.77	8%	38%	\$0.02	1	1	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	5,799.79	10	\$1,095.49	8%	38%	\$0.03	3	3	6th Plan
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	778.28	8	\$1,005.50	10%	50%	\$0.22	2	2	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	552.20	8	\$356.50	5%	25%	\$0.11	1	1	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$337.60	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,062.41	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$4.08	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	13,702.39	17	\$907.14	5%	6%	\$0.01	1	1	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,172.16	10	\$426.08	15%	36%	\$0.03	3	3	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	13,491.78	17	\$6,547.37	25%	44%	\$0.05	18	18	RSMeans 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,423.85	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$688.30	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$489.44	8%	38%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$596.60	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$169.66	8%	38%	\$10.00	0	0	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$1,657.30	8%	38%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Retrocommissioning	per Facility	Existing	5,329.07	3	\$2,002.42	5%	39%	\$0.08	12	13	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	Existing	4,747.51	3	\$651.15	0%	5%	\$0.01	2	2	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$399.45	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	1,623.36	10	\$3,046.58	15%	24%	\$0.05	1	1	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$1,456.93	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	New	4,561.82	3	\$2,002.42	5%	39%	\$0.08	2	2	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	2,535.86	10	\$77.10	15%	75%	\$0.00	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	2,611.82	15	\$1,494.72	15%	50%	\$0.06	0	0	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	665.63	15	\$216.69	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	76.81	5	\$13.32	15%	50%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	1,219.55	20	\$930.98	15%	50%	\$0.07	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	666.73	15	\$218.41	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	1,396.44	10	\$484.50	15%	50%	\$0.05	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$805.35	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	New	1,128.40	15	\$513.49	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	637.31	3	\$54.76	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	1,780.51	15	\$821.67	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$214.76	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	11,229.12	10	\$1,467.24	8%	38%	\$0.02	1	1	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	New	3,795.77	15	\$428.02	8%	38%	\$0.01	0	0	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	New	1,913.15	3	\$121.77	8%	38%	\$0.02	0	0	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	5,697.05	10	\$1,095.49	8%	38%	\$0.03	0	0	6th Plan
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	664.23	8	\$1,005.50	10%	50%	\$0.25	0	0	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	471.29	8	\$356.50	5%	25%	\$0.13	0	0	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$337.60	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,062.41	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$4.08	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	11,817.61	17	\$907.14	5%	6%	\$0.01	0	0	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,868.31	10	\$426.08	15%	36%	\$0.03	0	0	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	11,642.07	17	\$3,928.59	25%	44%	\$0.04	2	2	RSMeans 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,423.85	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$688.30	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,568.21	10	\$489.44	8%	38%	\$0.03	0	0	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	New	2,604.39	15	\$596.60	8%	38%	\$0.03	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,327.47	3	\$169.66	8%	38%	\$0.05	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	4,117.69	12	\$1,657.30	8%	38%	\$0.05	0	0	6th Plan
Metal Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	New	4,102.26	3	\$551.07	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$399.45	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	New	369.24	32	\$9,224.99	15%	52%	\$0.36	0	0	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$1,456.93	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$152.05	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$74.52	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$350.70	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$418.35	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,934.09	0%	0%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$268.02	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$12,932.38	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,435.88	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$13,143.48	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$130.57	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$18.68	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$110.39	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,782.99	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,962.82	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$50.68	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	76,617.60	10	\$7,086.41	15%	75%	\$0.01	80	80	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$22,258.51	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	Existing	367.20	5	\$99.43	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	3,634.43	10	\$1,987.60	15%	75%	\$0.08	4	4	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,445.35	5	\$2,156.61	15%	75%	\$0.33	7	8	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	894.44	15	\$427.59	15%	50%	\$0.06	1	1	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,715.54	18	\$1,026.12	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	602.22	3	\$56.91	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,764.17	15	\$855.17	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	Existing	545.66	3	\$2,002.42	5%	39%	\$0.08	7	2	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	Existing	2,307.49	3	\$651.15	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	Existing	735.40	10	\$3,046.58	15%	24%	\$0.05	1	1	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$152.05	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$74.52	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$350.70	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$418.35	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	New	735.02	3	\$2,002.42	5%	39%	\$0.08	1	1	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,934.09	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$268.02	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$12,932.38	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,435.88	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$13,143.48	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$130.57	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$18.68	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$110.39	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,782.99	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,962.82	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$50.68	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	New	76,649.19	10	\$7,086.41	15%	75%	\$0.01	9	9	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$22,258.51	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	New	367.58	5	\$99.43	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	3,623.78	10	\$1,987.60	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	New	1,630.71	5	\$2,156.61	15%	75%	\$0.28	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	872.67	15	\$427.59	15%	50%	\$0.06	0	0	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	New	1,722.74	18	\$1,026.12	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	New	602.47	3	\$56.91	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,791.78	15	\$855.17	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	New	2,720.98	3	\$551.07	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	New	220.41	32	\$9,224.99	15%	52%	\$0.36	0	0	6th Plan
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,820.08	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	484.54	3	\$651.15	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	167.21	10	\$3,046.58	15%	24%	\$0.05	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	177.48	15	\$39.30	15%	35%	\$0.02	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,514.81	20	\$6,624.22	100%	at stock turnover	\$0.13	1	1	BEST Simulation
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,649.35	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	New	186.06	3	\$551.07	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	17.55	32	\$9,224.99	15%	52%	\$0.36	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	68.18	15	\$18.90	15%	35%	\$0.03	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,252.86	20	\$4,170.72	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	23,396.08	23	\$38,376.86	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	12,855.58	23	\$5,224.24	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	5,469.08	10	\$235.01	15%	45%	\$0.01	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,048.78	15	\$153.77	15%	60%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	310.21	15	\$51.68	15%	75%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	11,201.68	15	\$167,334.85	15%	50%	\$1.51	0	0	BEST Simulation
Mining and Extraction	Cooling	Destratification Fans (HVLS)	per Facility	Existing	9,898.68	12	\$3,799.06	15%	50%	\$0.05	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	Existing	2,930.20	15	\$5,867.99	20%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	Existing	9,550.44	18	\$2,486.20	15%	75%	\$0.02	0	0	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	588.96	18	\$310.51	15%	25%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	Existing	3,983.01	10	\$1,188.02	18%	30%	\$0.01	0	0	DEER
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	7,226.22	45	\$24,568.96	15%	25%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	Existing	1,702.97	20	\$431.95	15%	25%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	549.30	45	\$3,228.02	45%	50%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	Existing	18,330.97	23	\$39,375.51	5%	at stock turnover	\$0.22	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$355.17	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	Existing	894.52	10	\$1,322.43	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	18,764.01	23	\$7,904.50	3%	at stock turnover	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	5,300.71	10	\$350.92	15%	45%	\$0.01	0	0	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	7,073.78	4	\$223.52	15%	50%	\$0.01	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,249.16	15	\$221.18	15%	60%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	270.34	15	\$54.87	15%	75%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	17,872.79	23	\$29,146.49	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	975.51	23	\$14,309,242.29	6%	at stock turnover	\$1,526.86	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,891.64	10	\$285.20	15%	45%	\$0.01	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	703.44	15	\$107.19	15%	60%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$4,722.08	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	4,881.28	15	\$167,334.85	15%	50%	\$3.41	0	0	BEST Simulation
Mining and Extraction	Cooling	Destratification Fans (HVLS)	per Facility	New	5,814.25	12	\$2,468.13	15%	50%	\$0.05	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	New	1,726.00	15	\$4,500.69	20%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	17,237.63	23	\$26,253.30	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	New	6,248.50	18	\$1,673.99	15%	75%	\$0.02	0	0	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	506.14	18	\$264.15	15%	25%	\$0.03	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	New	2,273.42	10	\$710.77	18%	30%	\$0.01	0	0	DEER
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	New	365.05	45	\$10,084.33	15%	25%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	New	981.87	20	\$453.00	15%	25%	\$0.17	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	59.63	45	\$470.44	45%	50%	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	New	10,903.50	23	\$23,308.63	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$952.80	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	New	135.10	32	\$4,287.37	15%	52%	\$0.13	0	0	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	12,220.72	23	\$5,992.69	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,862.10	10	\$223.74	15%	45%	\$0.01	0	0	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	3,793.84	4	\$143.77	15%	50%	\$0.01	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	458.60	15	\$102.09	15%	60%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$9,333.36	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	Existing	136.38	15	\$5,867.99	20%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	406.82	5	\$192.90	15%	25%	\$0.07	0	0	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	176.49	10	\$38.92	33%	60%	\$0.02	0	0	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,376.72	10	\$266.06	15%	30%	\$0.01	0	0	1 AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	2	2	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	1	1	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	1	3	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	116.49	15	-\$25.59	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	41.36	10	\$1,322.43	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	New	123.74	15	\$4,500.69	20%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	367.86	5	\$192.05	15%	25%	\$0.07	0	0	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	166.53	10	\$23.82	44%	60%	\$0.01	0	0	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,149.66	10	\$265.00	15%	30%	\$0.01	0	0	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	24.47	15	\$5.99	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.96	32	\$4,287.37	15%	52%	\$0.13	0	0	6th Plan
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$3,799.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Heating	Energy Management System	per Facility	Existing	11,037.73	15	\$5,867.99	20%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	926.88	23	\$32,577.49	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	Existing	1,919.45	18	\$2,486.20	15%	75%	\$0.02	0	0	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,126.73	18	\$310.51	15%	25%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	Existing	44,547.90	45	\$24,568.96	15%	25%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	Existing	528.28	20	\$431.95	15%	25%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	16,757.71	45	\$3,228.02	45%	50%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$355.17	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	Existing	3,345.94	10	\$1,322.43	15%	24%	\$0.02	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	5,060.37	23	\$37,328.15	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$2,468.13	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Heating	Energy Management System	per Facility	New	10,574.42	15	\$4,500.69	20%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	3,668.15	23	\$24,741.97	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	New	1,180.09	18	\$1,673.99	15%	75%	\$0.02	0	0	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	565.23	18	\$264.15	15%	25%	\$0.03	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	New	42,843.60	45	\$10,084.33	15%	25%	\$0.02	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	New	-886.62	20	\$453.00	15%	25%	\$0.17	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	New	12,019.13	45	\$470.44	45%	50%	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$952.80	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	New	859.08	32	\$4,287.37	15%	52%	\$0.13	0	0	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	Existing	872.58	15	\$5,867.99	20%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	15	17	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,708.88	5	\$754.16	5%	40%	\$0.05	0	1	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,769.74	5	\$1,005.75	15%	50%	\$0.05	0	1	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	5,452.81	12	\$1,164.62	3%	25%	\$0.02	1	2	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	818.92	16	\$114.85	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,069.61	10	\$3,403.91	7%	60%	\$0.07	2	4	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$26,159.36	15%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,829.29	8	\$100.60	7%	15%	\$0.01	0	0	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	283.52	5	\$8.08	10%	25%	\$0.00	0	0	AEG research & analysis
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	2	3	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	272.79	10	\$1,322.43	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	New	786.82	15	\$4,500.69	20%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	2	3	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,272.31	5	\$753.52	5%	40%	\$0.05	0	0	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,164.50	5	\$1,004.69	15%	50%	\$0.05	0	0	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,904.83	12	\$1,095.08	4%	25%	\$0.02	0	0	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	736.13	16	\$114.42	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,562.29	10	\$3,499.19	22%	60%	\$0.07	0	0	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$26,159.36	18%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,644.12	8	\$98.04	7%	15%	\$0.01	0	0	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.53	5	\$7.87	10%	25%	\$0.00	0	0	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	1	1	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.09	32	\$4,287.37	15%	52%	\$0.13	0	0	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	Existing	936.60	3	\$4,419.66	10%	40%	\$0.08	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	281.16	10	\$1,322.43	15%	24%	\$0.02	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	New	937.19	3	\$4,419.66	10%	40%	\$0.07	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	New	76.14	32	\$4,287.37	15%	52%	\$0.13	0	0	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	40,064.69	10	\$1,219.71	15%	75%	\$0.00	13	13	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	41,564.08	15	\$23,617.01	15%	50%	\$0.06	7	8	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	9,814.89	15	\$3,423.47	15%	38%	\$0.04	1	1	MI - TRM
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,155.86	5	\$210.34	15%	50%	\$0.04	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	19,368.22	20	\$14,710.28	15%	50%	\$0.07	3	4	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	9,950.34	15	\$3,449.42	15%	38%	\$0.04	1	1	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	22,685.87	10	\$1,859.65	15%	50%	\$0.01	4	4	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,595.08	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	Existing	17,881.12	15	\$1,970.67	8%	38%	\$0.01	3	3	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	Existing	10,050.49	3	\$210.13	8%	38%	\$0.01	2	2	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	29,294.60	15	\$3,152.95	8%	38%	\$0.01	5	5	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$425.36	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	39,637.60	10	\$5,151.27	8%	38%	\$0.02	6	6	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	Existing	13,354.90	15	\$1,502.36	8%	38%	\$0.01	2	2	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	Existing	6,835.11	3	\$427.27	8%	38%	\$0.02	1	1	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	20,396.92	10	\$3,846.28	8%	38%	\$0.03	3	3	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,441.44	8	\$5,033.02	10%	50%	\$0.33	2	3	Developed from RTF
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,732.23	8	\$1,784.37	5%	25%	\$0.17	1	1	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$21,263.31	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$81.03	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	43,098.93	17	\$11,349.55	5%	6%	\$0.03	1	1	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	6,892.01	10	\$1,599.97	15%	36%	\$0.03	4	4	6th Plan
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	Existing	41,915.97	17	\$54,986.56	25%	44%	\$0.14	20	21	RSMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$28,494.56	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$13,774.71	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	47,565.12	10	\$9,014.56	8%	38%	\$0.03	8	8	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	Existing	48,047.45	15	\$10,990.55	8%	38%	\$0.03	8	8	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	Existing	25,031.09	3	\$3,126.15	8%	38%	\$0.05	4	4	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	77,806.22	12	\$30,529.25	8%	38%	\$0.05	12	12	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	Existing	16,877.93	3	\$4,419.66	10%	40%	\$0.08	13	13	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,242.69	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	Existing	5,240.14	10	\$1,322.43	15%	24%	\$0.02	1	1	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$786.27	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	New	21,575.52	3	\$4,419.66	10%	40%	\$0.07	1	1	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$1,219.71	15%	75%	\$10.00	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$23,617.01	15%	50%	\$10.00	0	0	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$3,423.47	15%	38%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$210.34	15%	50%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$14,710.28	15%	50%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$3,449.42	15%	38%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$1,859.65	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,595.08	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$1,970.67	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$210.13	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$3,152.95	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$425.36	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$5,151.27	8%	38%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	New	0.00	15	\$1,502.36	8%	38%	\$10.00	0	0	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$427.27	8%	38%	\$10.00	0	0	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$3,846.28	8%	38%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	3,096.50	8	\$5,033.02	10%	50%	\$0.27	0	0	Developed from RTF
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2,197.06	8	\$1,784.37	5%	25%	\$0.13	0	0	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$21,263.31	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$81.03	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	55,645.40	17	\$11,349.55	5%	6%	\$0.02	0	0	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	8,896.39	10	\$1,599.97	15%	36%	\$0.03	0	0	6th Plan
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	New	53,440.01	17	\$32,991.85	25%	44%	\$0.07	2	2	RSMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$28,494.56	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$13,774.71	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	47,250.31	10	\$9,014.56	8%	38%	\$0.03	1	1	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	New	47,915.92	15	\$10,990.55	8%	38%	\$0.03	1	1	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	New	24,850.36	3	\$3,126.15	8%	38%	\$0.05	0	0	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	New	77,082.86	12	\$30,529.25	8%	38%	\$0.05	1	1	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,242.69	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	New	1,727.18	32	\$4,287.37	15%	52%	\$0.13	0	0	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$786.27	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$48.70	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$229.05	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$273.08	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$175.03	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$8,440.54	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$937.27	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$8,578.57	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,981.52	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$33.82	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$778.83	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$14,886.17	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	Existing	1,030.90	5	\$67.63	15%	75%	\$0.02	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	10,274.99	10	\$1,352.21	15%	75%	\$0.02	3	3	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	Existing	1,374.65	5	\$350.28	15%	75%	\$0.06	1	1	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$149.30	15%	50%	\$10.00	0	0	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$309.66	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$17.23	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$258.19	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	Existing	757.60	3	\$4,419.66	10%	40%	\$0.08	1	0	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	Existing	701.51	10	\$1,322.43	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$48.70	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$229.05	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$273.08	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	New	417.37	3	\$4,419.66	10%	40%	\$0.07	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$175.03	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$8,440.54	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$937.27	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$8,578.57	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,981.52	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$33.82	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$778.83	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$14,886.17	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	New	1,030.90	5	\$67.63	15%	75%	\$0.02	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	10,270.85	10	\$1,352.21	15%	75%	\$0.02	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	New	1,023.65	5	\$350.28	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,057.88	15	\$149.30	15%	50%	\$0.02	0	0	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	New	2,172.00	18	\$309.66	15%	50%	\$0.02	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	New	749.75	3	\$17.23	15%	50%	\$0.01	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	2,229.80	15	\$258.19	15%	50%	\$0.01	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	New	138.35	32	\$4,287.37	15%	52%	\$0.13	0	0	6th Plan
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$3,799.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	Existing	117.09	10	\$1,322.43	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	124.28	15	\$5.95	15%	35%	\$0.00	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	3,854.99	20	\$4,630.50	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$2,468.13	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	New	12.28	32	\$4,287.37	15%	52%	\$0.13	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	47.72	15	\$2.55	15%	35%	\$0.01	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,273.83	20	\$2,915.44	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	45,983.04	23	\$75,426.52	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	25,266.57	23	\$10,267.81	6%	at stock turnover	\$0.04	1	1	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,730.26	10	\$27,307.54	15%	45%	\$0.36	0	0	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,087.28	15	\$12,183.88	15%	60%	\$0.65	0	0	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	607.11	15	\$4,830.97	15%	75%	\$0.86	0	0	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	22,848.49	15	\$419,861.48	15%	50%	\$1.92	1	1	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	18,840.27	12	\$324,044.69	15%	50%	\$1.98	1	1	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	Existing	5,749.05	15	\$406,427.30	20%	50%	\$1.63	0	0	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	44,381.90	23	\$67,939.42	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	18,737.90	18	\$207,787.14	15%	75%	\$0.94	0	0	AEG research & analysis
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,175.08	18	\$19,734.77	15%	25%	\$0.61	0	0	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	Existing	7,766.09	10	\$133,546.69	18%	30%	\$0.77	0	0	DEER
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	14,177.85	45	\$1,692,583.94	15%	25%	\$1.44	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,387.67	20	\$32,030.18	15%	25%	\$0.70	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,093.28	45	\$225,699.03	45%	50%	\$0.58	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	36,027.99	23	\$77,389.29	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	Existing	5,240.00	3	\$6,270.17	0%	5%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$891.17	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,785.10	10	\$29,041.84	15%	24%	\$0.41	0	0	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	36,879.09	23	\$15,535.64	3%	at stock turnover	\$0.04	1	1	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,399.99	10	\$27,452.15	15%	45%	\$0.35	0	0	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,878.72	4	\$16,597.02	15%	50%	\$0.32	0	0	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,486.04	15	\$15,075.63	15%	60%	\$0.63	0	0	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	530.41	15	\$4,391.26	15%	75%	\$0.83	0	0	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	35,127.47	23	\$57,284.99	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,917.28	23	\$1,219,514.68	6%	at stock turnover	\$66.21	0	0	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	11,564.62	10	\$28,994.88	15%	45%	\$0.37	0	0	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,399.71	15	\$8,123.48	15%	60%	\$0.66	0	0	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$11,848.23	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	9,581.00	15	\$419,861.48	15%	50%	\$4.35	0	0	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	11,391.29	12	\$221,499.88	15%	50%	\$2.28	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	New	3,387.78	15	\$330,076.87	20%	50%	\$1.49	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	33,879.13	23	\$51,598.68	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	12,261.39	18	\$154,906.90	15%	75%	\$0.97	0	0	AEG research & analysis
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,018.79	18	\$13,405.90	15%	25%	\$0.65	0	0	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	New	4,443.51	10	\$83,051.78	18%	30%	\$0.85	0	0	DEER
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	708.79	45	\$1,236,827.18	15%	25%	\$1.28	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	2,002.24	20	\$9,302.27	15%	25%	\$1.82	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	114.95	45	\$138,068.15	45%	50%	\$0.51	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	New	21,429.91	23	\$45,811.17	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	New	3,072.80	3	\$5,012.40	0%	5%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$2,390.67	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	New	264.69	32	\$83,902.92	15%	52%	\$3.10	0	0	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	24,018.81	23	\$11,778.13	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,618.02	10	\$17,856.92	15%	45%	\$0.37	0	0	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,446.93	4	\$10,739.34	15%	50%	\$0.34	0	0	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	912.46	15	\$6,654.39	15%	60%	\$0.66	0	0	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$23,418.43	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$406,427.30	20%	50%	\$1.63	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$775.90	15%	25%	\$0.30	0	0	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$1,817.02	33%	60%	\$1.00	0	0	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$12,410.14	15%	30%	\$0.55	1	2	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	4	4	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent T8 HE (58.2 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	2	2	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$6,270.17	0%	5%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$29,041.84	15%	24%	\$0.41	0	0	6th Plan
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$330,076.87	20%	50%	\$1.49	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$772.17	15%	25%	\$0.29	0	0	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$1,113.16	44%	60%	\$0.58	0	0	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$12,351.44	15%	30%	\$0.53	0	0	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	1	1	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent T8 HE (58.2 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$5,012.40	0%	5%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$83,902.92	15%	52%	\$3.10	0	0	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,452.19	23	\$83,195.47	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$324,044.69	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	Existing	21,655.80	15	\$406,427.30	20%	50%	\$1.63	2	2	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,821.70	23	\$64,028.34	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	3,765.93	18	\$207,787.14	15%	75%	\$0.94	0	0	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,210.63	18	\$19,734.77	15%	25%	\$0.61	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	87,402.04	45	\$1,692,583.94	15%	25%	\$1.44	2	2	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,036.47	20	\$32,030.18	15%	25%	\$0.70	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	32,857.64	45	\$225,699.03	45%	50%	\$0.58	0	0	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	Existing	19,029.62	3	\$6,270.17	0%	5%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$891.17	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	6,575.65	10	\$29,041.84	15%	24%	\$0.41	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,945.74	23	\$73,365.36	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$221,499.88	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	New	20,755.36	15	\$330,076.87	20%	50%	\$1.49	0	0	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,209.44	23	\$48,628.28	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,344.82	18	\$154,906.90	15%	75%	\$0.97	0	0	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,123.56	18	\$13,405.90	15%	25%	\$0.65	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	84,059.37	45	\$1,236,827.18	15%	25%	\$1.28	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,741.89	20	\$9,302.27	15%	25%	\$1.82	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	23,591.00	45	\$138,068.15	45%	50%	\$0.51	0	0	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	New	18,276.13	3	\$5,012.40	0%	5%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$2,390.67	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,686.63	32	\$83,902.92	15%	52%	\$3.10	0	0	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$406,427.30	20%	50%	\$1.63	0	1	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	32	36	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,831.74	5	\$5,261.08	5%	40%	\$0.32	1	1	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,942.43	5	\$7,015.12	15%	50%	\$0.32	1	2	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$47,165.58	3%	25%	\$0.89	2	4	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	821.76	16	\$868.22	1%	3%	\$0.09	0	0	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$31,093.66	7%	60%	\$0.65	5	8	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$65,636.71	15%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$4,076.41	7%	15%	\$0.30	0	1	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	283.05	5	\$219.86	10%	25%	\$0.09	0	0	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent T8 HE (58.2 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	16	18	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	3	7	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	80.58	15	-\$13.65	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$6,270.17	0%	5%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$29,041.84	15%	24%	\$0.41	0	0	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$330,076.87	20%	50%	\$1.49	0	0	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	5	6	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,485.37	5	\$5,255.74	5%	40%	\$0.35	0	0	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,207.67	5	\$7,007.65	15%	50%	\$0.35	0	0	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$44,338.40	4%	25%	\$0.81	0	0	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.17	16	\$865.02	1%	3%	\$0.09	0	0	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$31,964.01	22%	60%	\$0.64	0	0	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$65,636.71	18%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$3,968.09	7%	15%	\$0.28	0	0	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.13	5	\$218.26	10%	25%	\$0.12	0	0	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent T8 HE (58.2 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	2	3	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	1	1	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	78.04	15	-\$120.71	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	712.73	3	\$5,012.40	0%	5%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$83,902.92	15%	52%	\$3.10	0	0	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$266.82	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,669.22	3	\$7,525.81	5%	39%	\$0.65	1	1	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,450.10	3	\$6,270.17	0%	5%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	501.08	10	\$29,041.84	15%	24%	\$0.41	0	0	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$266.82	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	New	1,670.96	3	\$7,525.81	5%	39%	\$0.65	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,450.10	3	\$5,012.40	0%	5%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	135.58	32	\$83,902.92	15%	52%	\$3.10	0	0	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	4,777.56	10	\$1,328.74	15%	75%	\$0.04	3	3	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,947.74	15	\$25,725.85	15%	50%	\$0.54	2	2	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,240.35	15	\$3,729.02	15%	38%	\$0.33	0	0	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	146.06	5	\$228.93	15%	50%	\$0.35	0	0	MI - TRM
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	2,282.06	20	\$16,023.89	15%	50%	\$0.60	1	1	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,257.54	15	\$3,757.30	15%	38%	\$0.33	0	0	MI - TRM
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	2,653.67	10	\$8,340.13	15%	50%	\$0.43	1	1	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$4,002.24	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	2,091.91	15	\$8,837.48	8%	38%	\$0.44	1	1	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,195.73	3	\$942.93	8%	38%	\$0.28	0	0	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	3,426.93	15	\$14,140.17	8%	38%	\$0.44	1	1	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,067.26	15%	50%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	8,753.58	10	\$10,409.02	8%	38%	\$0.18	3	3	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	Existing	2,947.45	15	\$3,035.83	8%	38%	\$0.12	1	1	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,509.47	3	\$863.42	8%	38%	\$0.21	1	1	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	4,504.47	10	\$7,772.35	8%	38%	\$0.25	1	2	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	234.21	8	\$3,341.60	10%	50%	\$2.29	1	1	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	166.17	8	\$1,184.66	5%	25%	\$1.15	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$1,678.27	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$432.78	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.60	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	4,258.76	17	\$3,014.49	5%	6%	\$0.08	0	0	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	668.05	10	\$1,416.26	15%	36%	\$0.31	1	1	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	4,064.14	17	\$21,758.30	25%	44%	\$0.57	4	4	RSMeans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$580.06	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$280.16	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	2,429.64	10	\$4,213.56	8%	38%	\$0.26	1	1	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	Existing	2,454.28	15	\$5,136.74	8%	38%	\$0.25	1	1	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	1,278.51	3	\$1,461.08	8%	38%	\$0.42	0	0	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	3,974.10	12	\$14,269.31	8%	38%	\$0.47	1	1	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	Existing	1,603.57	3	\$7,525.81	5%	39%	\$0.65	3	3	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,478.96	3	\$6,270.17	0%	5%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$162.76	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	498.46	10	\$29,041.84	15%	24%	\$0.41	0	0	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,587.58	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	New	1,587.37	3	\$7,525.81	5%	39%	\$0.65	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	4,777.56	10	\$1,328.74	15%	75%	\$0.04	0	0	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	4,920.67	15	\$25,725.85	15%	50%	\$0.54	0	0	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,254.04	15	\$3,729.02	15%	38%	\$0.33	0	0	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	144.71	5	\$228.93	15%	50%	\$0.35	0	0	MI - TRM
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	2,297.64	20	\$16,023.89	15%	50%	\$0.60	0	0	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,256.12	15	\$3,757.30	15%	38%	\$0.33	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	2,630.90	10	\$8,340.13	15%	50%	\$0.43	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$4,002.24	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	New	2,125.90	15	\$8,837.48	8%	38%	\$0.44	0	0	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	1,200.68	3	\$942.93	8%	38%	\$0.28	0	0	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	3,354.48	15	\$14,140.17	8%	38%	\$0.44	0	0	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,067.26	15%	50%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	8,721.23	10	\$10,409.02	8%	38%	\$0.18	0	0	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	New	2,948.03	15	\$3,035.83	8%	38%	\$0.12	0	0	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	New	1,485.87	3	\$863.42	8%	38%	\$0.21	0	0	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	4,424.68	10	\$7,772.35	8%	38%	\$0.25	0	0	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	231.14	8	\$3,341.60	10%	50%	\$2.29	0	0	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	164.00	8	\$1,184.66	5%	25%	\$1.15	0	0	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$1,678.27	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$432.78	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.60	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,263.47	17	\$3,014.49	5%	6%	\$0.08	0	0	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	664.12	10	\$1,416.26	15%	36%	\$0.31	0	0	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,131.35	17	\$13,054.77	25%	44%	\$0.34	1	1	RSMeans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$580.06	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$280.16	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,420.67	10	\$4,213.56	8%	38%	\$0.26	0	0	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	New	2,454.77	15	\$5,136.74	8%	38%	\$0.25	0	0	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,251.21	3	\$1,461.08	8%	38%	\$0.42	0	0	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,881.14	12	\$14,269.31	8%	38%	\$0.47	0	0	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	New	1,479.98	3	\$5,012.40	0%	5%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$162.76	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	New	128.49	32	\$83,902.92	15%	52%	\$3.10	0	0	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,587.58	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,309.53	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$132.87	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$625.42	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$746.02	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$24,520.38	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$478.13	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$23,058.23	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,560.37	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$23,434.97	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$387.42	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$93.39	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$548.57	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$18,799.85	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$9,786.27	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$167.56	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$21,049.11	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$73,520.58	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	Existing	60.69	5	\$149.95	15%	75%	\$0.60	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	600.66	10	\$3,000.61	15%	75%	\$0.74	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	Existing	563.02	5	\$7,123.45	15%	75%	\$3.02	2	2	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	863.58	15	\$3,771.18	15%	50%	\$0.52	0	0	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,656.35	18	\$9,050.39	15%	50%	\$0.57	1	1	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	581.44	3	\$502.68	15%	50%	\$0.32	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,703.30	15	\$7,541.82	15%	50%	\$0.52	1	1	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	Existing	245.75	3	\$7,525.81	5%	39%	\$0.65	2	0	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	Existing	834.36	3	\$6,270.17	0%	5%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	Existing	287.91	10	\$29,041.84	15%	24%	\$0.41	0	0	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,309.53	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$132.87	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$625.42	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$746.02	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Commissioning	per Facility	New	246.25	3	\$7,525.81	5%	39%	\$0.65	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$24,520.38	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$478.13	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$23,058.23	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,560.37	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$23,434.97	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$387.42	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$93.39	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$548.57	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$18,799.85	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$9,786.27	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$167.56	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$21,049.11	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$73,520.58	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	New	60.75	5	\$149.95	15%	75%	\$0.60	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	598.90	10	\$3,000.61	15%	75%	\$0.74	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Process - Timers and Controls	per Facility	New	561.41	5	\$7,123.45	15%	75%	\$3.02	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	864.98	15	\$3,771.18	15%	50%	\$0.52	0	0	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	New	1,663.30	18	\$9,050.39	15%	50%	\$0.57	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	New	581.68	3	\$502.68	15%	50%	\$0.32	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,707.53	15	\$7,541.82	15%	50%	\$0.52	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	New	834.36	3	\$5,012.40	0%	5%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	New	75.87	32	\$83,902.92	15%	52%	\$3.10	0	0	6th Plan
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$324,044.69	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	665.70	3	\$6,270.17	0%	5%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	229.73	10	\$29,041.84	15%	24%	\$0.41	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	243.84	15	\$493.08	15%	35%	\$0.21	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	7,576.67	20	\$9,100.87	100%	at stock turnover	\$0.13	1	1	BEST Simulation
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$221,499.88	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	New	255.62	3	\$5,012.40	0%	5%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	24.11	32	\$83,902.92	15%	52%	\$3.10	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	93.67	15	\$235.87	15%	35%	\$0.30	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,469.03	20	\$5,730.06	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	32,658.92	23	\$53,570.81	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	17,945.29	23	\$7,292.59	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,634.36	10	\$2,120.55	15%	45%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,472.63	15	\$950.01	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	428.33	15	\$373.22	15%	75%	\$0.09	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	15,506.41	15	\$13,347,598.77	15%	50%	\$86.15	0	0	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,702.45	12	\$25,192.15	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	Existing	4,056.18	15	\$32,096.67	20%	50%	\$0.18	0	0	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	31,521.73	23	\$48,253.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	13,220.14	18	\$16,150.12	15%	75%	\$0.10	0	0	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	829.06	18	\$1,526.80	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	Existing	5,479.23	10	\$10,382.22	18%	30%	\$0.08	0	0	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,003.00	45	\$131,592.94	15%	25%	\$0.16	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,390.11	20	\$2,493.77	15%	25%	\$0.08	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	771.35	45	\$17,541.20	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	25,588.46	23	\$54,964.85	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,669.06	3	\$4,461.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,833.06	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,259.44	10	\$4,393.78	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	26,192.95	23	\$11,034.01	3%	at stock turnover	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,399.33	10	\$2,137.52	15%	45%	\$0.04	0	0	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	9,874.39	4	\$1,289.30	15%	50%	\$0.03	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,754.01	15	\$1,170.54	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	374.23	15	\$339.29	15%	75%	\$0.09	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,361.72	23	#####	6%	at stock turnover	\$785,232.58	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,224.64	10	\$2,256.27	15%	45%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	989.07	15	\$627.68	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$37,660.99	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	6,770.39	15	\$13,347,598.77	15%	50%	\$194.66	0	0	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	8,049.54	12	\$17,218.88	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	New	2,393.93	15	\$26,159.12	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	24,062.26	23	\$36,647.37	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	8,664.37	18	\$12,044.73	15%	75%	\$0.11	0	0	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	719.91	18	\$1,034.83	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	New	3,139.93	10	\$6,463.44	18%	30%	\$0.09	0	0	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	500.86	45	\$96,171.25	15%	25%	\$0.14	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,414.86	20	\$729.47	15%	25%	\$0.20	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	81.23	45	\$10,738.47	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	New	2,143.42	3	\$3,986.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$7,600.06	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	New	187.04	32	\$13,910.82	15%	52%	\$0.40	0	0	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	17,059.08	23	\$8,365.28	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,995.45	10	\$1,391.08	15%	45%	\$0.04	0	0	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,296.15	4	\$831.26	15%	50%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	644.79	15	\$525.90	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$74,439.84	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	134.07	15	\$32,096.67	20%	50%	\$0.18	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	445.63	5	\$84.82	15%	25%	\$0.03	0	0	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	173.50	10	\$203.57	33%	60%	\$0.11	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,334.77	10	\$1,357.15	15%	30%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	0	0	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	127.58	3	\$4,461.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	43.80	10	\$4,393.78	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	New	121.85	15	\$26,159.12	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	403.06	5	\$84.82	15%	25%	\$0.03	0	0	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	163.98	10	\$118.75	44%	60%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,116.61	10	\$1,357.15	15%	30%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	115.38	3	\$3,986.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.90	32	\$13,910.82	15%	52%	\$0.40	0	0	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,582.59	23	\$59,088.63	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,192.15	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	Existing	15,278.42	15	\$32,096.67	20%	50%	\$0.18	0	0	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,293.84	23	\$45,475.39	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	2,656.91	18	\$16,150.12	15%	75%	\$0.10	0	0	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,559.62	18	\$1,526.80	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	61,662.97	45	\$131,592.94	15%	25%	\$0.16	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	731.24	20	\$2,493.77	15%	25%	\$0.08	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	23,181.36	45	\$17,541.20	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	Existing	13,515.57	3	\$4,461.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,833.06	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	4,639.18	10	\$4,393.78	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,063.85	23	\$52,106.90	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,218.88	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	New	14,666.27	15	\$26,159.12	20%	50%	\$0.16	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,120.42	23	\$34,537.68	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	New	1,656.91	18	\$12,044.73	15%	75%	\$0.11	0	0	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	793.94	18	\$1,034.83	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	59,398.30	45	\$96,171.25	15%	25%	\$0.14	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,230.87	20	\$729.47	15%	25%	\$0.20	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	16,669.94	45	\$10,738.47	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	New	12,980.41	3	\$3,986.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$7,600.06	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,191.82	32	\$13,910.82	15%	52%	\$0.40	0	0	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	Existing	761.36	15	\$32,096.67	20%	50%	\$0.18	0	0	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,836.59	5	\$576.79	5%	40%	\$0.03	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,949.21	5	\$763.40	15%	50%	\$0.03	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,752.48	12	\$5,157.18	3%	25%	\$0.10	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	823.18	16	\$101.79	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,266.08	10	\$3,409.85	7%	60%	\$0.07	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$2,086,622.58	15%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,828.07	8	\$441.07	7%	15%	\$0.03	0	0	CA - DEER
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	283.52	5	\$16.96	10%	25%	\$0.01	0	0	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	0	0	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	767.41	3	\$4,461.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	263.45	10	\$4,393.78	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	New	710.45	15	\$26,159.12	20%	50%	\$0.16	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,382.36	5	\$576.79	5%	40%	\$0.04	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,318.21	5	\$763.40	15%	50%	\$0.04	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,427.53	12	\$4,851.82	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.85	16	\$101.79	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,752.96	10	\$3,494.67	22%	60%	\$0.07	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$2,086,622.58	18%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,643.22	8	\$441.07	7%	15%	\$0.03	0	0	CA - DEER
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.53	5	\$16.96	10%	25%	\$0.01	0	0	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	0	0	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	690.91	3	\$3,986.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	57.73	32	\$13,910.82	15%	52%	\$0.40	0	0	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$848.22	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,584.78	3	\$3,477.70	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,260.53	3	\$4,461.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	775.92	10	\$4,393.78	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$848.22	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	New	2,591.56	3	\$3,477.70	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,260.53	3	\$3,986.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	210.87	32	\$13,910.82	15%	52%	\$0.40	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	17,995.25	10	\$542.86	15%	75%	\$0.00	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	18,512.99	15	\$10,602.76	15%	50%	\$0.06	0	0	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	4,680.08	15	\$1,543.76	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	551.12	5	\$101.79	15%	50%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	8,493.28	20	\$6,599.16	15%	50%	\$0.07	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	4,744.96	15	\$1,543.76	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	9,935.17	10	\$3,443.78	15%	50%	\$0.05	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$12,723.31	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	7,832.07	15	\$3,647.35	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	4,511.74	3	\$390.18	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	12,830.29	15	\$5,835.76	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$3,392.88	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	53,413.97	10	\$6,938.44	8%	38%	\$0.02	0	0	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	Existing	17,985.21	15	\$2,018.76	8%	38%	\$0.01	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	Existing	9,210.71	3	\$576.79	8%	38%	\$0.02	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	27,486.02	10	\$5,191.11	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,165.60	8	\$3,341.99	10%	50%	\$0.25	0	0	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,536.52	8	\$1,187.51	5%	25%	\$0.13	0	0	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$5,326.83	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	94,208.23	10	\$7,905.42	15%	29%	\$0.01	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	804.30	1	\$33.93	15%	52%	\$0.04	0	0	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	39,240.34	17	\$3,019.67	5%	6%	\$0.01	0	0	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	6,147.52	10	\$1,425.01	15%	36%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	37,434.82	17	\$21,765.34	25%	44%	\$0.06	0	0	RSMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$10,585.79	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	27,364.01	10	\$5,123.25	15%	29%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	33,065.79	10	\$6,259.87	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	Existing	33,401.10	15	\$7,633.99	8%	38%	\$0.03	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	17,264.43	3	\$2,171.44	8%	38%	\$0.05	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	53,631.13	12	\$21,222.48	8%	38%	\$0.05	0	0	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	Existing	14,817.08	3	\$3,477.70	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	Existing	13,268.77	3	\$4,461.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,968.77	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	4,528.84	10	\$4,393.78	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,442.88	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	New	14,651.87	3	\$3,477.70	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	17,995.25	10	\$542.86	15%	75%	\$0.00	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	18,440.73	15	\$10,602.76	15%	50%	\$0.06	0	0	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	4,701.95	15	\$1,543.76	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	545.80	5	\$101.79	15%	50%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	8,545.02	20	\$6,599.16	15%	50%	\$0.07	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	4,765.49	15	\$1,543.76	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	9,859.40	10	\$3,443.78	15%	50%	\$0.05	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$12,723.31	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	New	7,791.02	15	\$3,647.35	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	4,528.56	3	\$390.18	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	12,747.11	15	\$5,835.76	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$3,392.88	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	53,194.61	10	\$6,938.44	8%	38%	\$0.02	0	0	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	New	17,981.36	15	\$2,018.76	8%	38%	\$0.01	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	New	9,062.95	3	\$576.79	8%	38%	\$0.02	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	26,987.99	10	\$5,191.11	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	2,136.74	8	\$3,341.99	10%	50%	\$0.25	0	0	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,516.08	8	\$1,187.51	5%	25%	\$0.13	0	0	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$5,326.83	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	94,188.06	10	\$7,905.42	15%	29%	\$0.01	0	0	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	779.57	1	\$33.93	15%	52%	\$0.04	0	0	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	39,251.48	17	\$3,019.67	5%	6%	\$0.01	0	0	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	6,100.95	10	\$1,425.01	15%	36%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	37,999.44	17	\$13,062.60	25%	44%	\$0.04	0	0	RSMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$10,585.79	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	27,013.27	10	\$5,123.25	15%	29%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	32,930.00	10	\$6,259.87	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	New	33,393.95	15	\$7,633.99	8%	38%	\$0.03	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	New	16,912.03	3	\$2,171.44	8%	38%	\$0.05	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	52,459.57	12	\$21,222.48	8%	38%	\$0.05	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	New	12,977.78	3	\$3,986.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,968.77	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	New	1,187.80	32	\$13,910.82	15%	52%	\$0.40	0	0	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,442.88	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,950.91	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$67.86	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$339.29	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$407.15	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$77,951.47	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$254.47	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$12,367.06	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,374.12	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$12,570.63	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$118.75	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$288.39	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$1,747.33	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$59,765.62	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	7,219.47	10	\$2,697.34	15%	25%	\$0.06	0	0	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	79.17	5	\$50.89	15%	38%	\$0.15	0	0	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$6,429.51	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	8,957.52	10	\$20,306.40	15%	40%	\$0.33	0	0	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	Existing	292.62	5	\$84.82	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,918.37	10	\$1,611.62	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,384.56	5	\$1,967.87	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	880.13	15	\$441.07	15%	50%	\$0.06	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,736.09	18	\$1,051.79	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	618.48	3	\$50.89	15%	50%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,810.18	15	\$882.15	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	Existing	534.80	3	\$3,477.70	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	Existing	2,104.61	3	\$4,461.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	Existing	722.40	10	\$4,393.78	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,950.91	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$67.86	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$339.29	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$407.15	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	New	535.15	3	\$3,477.70	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$77,951.47	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$254.47	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$12,367.06	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,374.12	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$12,570.63	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$118.75	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$288.39	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$1,747.33	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$59,765.62	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	7,238.67	10	\$2,697.34	15%	25%	\$0.06	0	0	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	New	78.90	5	\$50.89	15%	38%	\$0.15	0	0	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$6,429.51	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	New	8,926.43	10	\$20,306.40	15%	40%	\$0.33	0	0	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	New	292.03	5	\$84.82	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,909.51	10	\$1,611.62	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	New	1,368.17	5	\$1,967.87	15%	75%	\$0.33	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	882.29	15	\$441.07	15%	50%	\$0.06	0	0	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	New	1,741.76	18	\$1,051.79	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	New	618.48	3	\$50.89	15%	50%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,811.51	15	\$882.15	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	New	2,104.69	3	\$3,986.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	New	184.91	32	\$13,910.82	15%	52%	\$0.40	0	0	6th Plan
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,192.15	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	472.17	3	\$4,461.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	162.08	10	\$4,393.78	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	173.48	15	\$33.93	15%	35%	\$0.02	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,381.24	20	\$6,463.79	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,218.88	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	New	181.20	3	\$3,986.64	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	17.03	32	\$13,910.82	15%	52%	\$0.40	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	66.62	15	\$16.96	15%	35%	\$0.03	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,174.08	20	\$4,069.71	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	45,342.82	23	\$74,376.35	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	24,914.79	23	\$10,124.85	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,580.86	10	\$2,947.69	15%	45%	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,058.22	15	\$1,314.21	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	598.66	15	\$522.22	15%	75%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	21,671.78	15	\$1,947,305.81	15%	50%	\$9.05	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	Existing	19,150.82	12	\$34,978.74	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	Existing	5,669.01	15	\$43,896.05	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	43,763.97	23	\$66,993.50	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	Existing	18,477.01	18	\$22,430.65	15%	75%	\$0.10	0	0	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,158.72	18	\$2,130.95	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	Existing	7,657.96	10	\$14,416.70	18%	30%	\$0.08	0	0	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	13,980.45	45	\$182,709.66	15%	25%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,340.50	20	\$3,457.53	15%	25%	\$0.08	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,078.06	45	\$24,363.60	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	Existing	35,526.37	23	\$76,311.80	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	Existing	5,167.05	3	\$1,467.66	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$4,133.20	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	Existing	1,760.25	10	\$6,952.19	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	36,365.62	23	\$15,319.33	3%	at stock turnover	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,255.19	10	\$2,962.54	15%	45%	\$0.04	0	0	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,685.48	4	\$1,791.88	15%	50%	\$0.03	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,451.43	15	\$1,628.53	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	523.03	15	\$475.19	15%	75%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	34,638.39	23	\$56,487.41	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,890.58	23	#####	6%	at stock turnover	\$82,513.06	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	11,403.61	10	\$3,130.84	15%	45%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,380.22	15	\$876.14	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$54,951.74	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	9,447.61	15	\$1,947,305.81	15%	50%	\$20.46	0	0	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	New	11,232.69	12	\$23,910.68	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	New	3,340.61	15	\$35,654.41	20%	50%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	New	12,090.67	18	\$16,720.89	15%	75%	\$0.11	0	0	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,004.61	18	\$1,447.86	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	New	4,381.65	10	\$8,964.34	18%	30%	\$0.09	0	0	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	New	698.92	45	\$133,512.22	15%	25%	\$0.14	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	New	1,974.36	20	\$1,004.84	15%	25%	\$0.20	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	113.35	45	\$14,904.26	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	New	21,131.55	23	\$45,173.34	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	New	3,030.01	3	\$1,331.53	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$11,087.86	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	New	261.00	32	\$22,294.52	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	23,684.40	23	\$11,614.14	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,539.80	10	\$1,928.00	15%	45%	\$0.04	0	0	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,343.24	4	\$1,158.29	15%	50%	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	899.75	15	\$717.74	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$108,614.03	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$43,896.05	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$84.15	15%	25%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$198.00	33%	60%	\$0.11	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,358.76	15%	30%	\$0.06	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$1,467.66	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$6,952.19	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$35,654.41	20%	50%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$84.15	15%	25%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$121.27	44%	60%	\$0.06	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,351.33	15%	30%	\$0.06	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$1,331.53	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$22,294.52	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,362.35	23	\$82,037.14	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$34,978.74	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	Existing	21,354.29	15	\$43,896.05	20%	50%	\$0.18	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,796.34	23	\$63,136.87	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	Existing	3,713.50	18	\$22,430.65	15%	75%	\$0.10	0	0	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,179.85	18	\$2,130.95	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	Existing	86,185.14	45	\$182,709.66	15%	25%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,022.04	20	\$3,457.53	15%	25%	\$0.08	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	32,400.17	45	\$24,363.60	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	Existing	18,764.67	3	\$1,467.66	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$4,133.20	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	Existing	6,484.10	10	\$6,952.19	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,807.26	23	\$72,343.90	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$23,910.68	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	New	20,466.39	15	\$35,654.41	20%	50%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,109.06	23	\$47,951.23	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	New	2,312.17	18	\$16,720.89	15%	75%	\$0.11	0	0	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,107.92	18	\$1,447.86	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	New	82,889.01	45	\$133,512.22	15%	25%	\$0.14	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	New	-1,717.64	20	\$1,004.84	15%	25%	\$0.20	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	New	23,262.54	45	\$14,904.26	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	New	18,021.68	3	\$1,331.53	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$11,087.86	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	New	1,663.15	32	\$22,294.52	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$43,896.05	20%	50%	\$0.18	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	0	0	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,956.82	5	\$576.67	5%	40%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.34	5	\$767.24	15%	50%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,162.79	3%	25%	\$0.10	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	822.11	16	\$94.05	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,403.08	7%	60%	\$0.07	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$304,421.22	15%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$445.49	7%	15%	\$0.03	0	0	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	282.87	5	\$24.75	10%	25%	\$0.01	0	0	AEG research & analysis
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	0	0	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$1,467.66	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$6,952.19	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$35,654.41	20%	50%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,485.37	5	\$574.19	5%	40%	\$0.04	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,207.67	5	\$767.24	15%	50%	\$0.04	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$4,853.41	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.17	16	\$94.05	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,499.61	22%	60%	\$0.07	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$304,421.22	18%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$435.59	7%	15%	\$0.03	0	0	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.13	5	\$24.75	10%	25%	\$0.01	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	0	0	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	339.13	15	-\$6,096.51	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	New	712.73	3	\$1,331.53	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$22,294.52	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$1,237.48	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	Existing	1,899.06	3	\$8,677.24	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,649.77	3	\$1,467.66	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	570.08	10	\$6,952.19	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$1,237.48	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	New	1,901.03	3	\$8,677.24	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	New	1,649.77	3	\$1,331.53	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	New	154.25	32	\$22,294.52	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	63,746.51	10	\$1,940.38	15%	75%	\$0.00	1	1	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	66,017.26	15	\$37,577.46	15%	50%	\$0.06	0	0	OH - TRM
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	16,653.59	15	\$5,447.41	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,948.89	5	\$334.12	15%	50%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	30,449.34	20	\$23,405.78	15%	50%	\$0.07	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	16,675.54	15	\$5,489.48	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	35,429.46	10	\$12,181.80	15%	50%	\$0.05	0	0	VT - TRM

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Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$18,562.27	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	Existing	27,929.26	15	\$12,909.44	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	Existing	15,954.54	3	\$1,376.08	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	45,753.33	15	\$20,653.62	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$4,949.94	15%	50%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	81,889.24	10	\$10,659.69	8%	38%	\$0.02	0	0	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	Existing	27,573.20	15	\$3,108.56	8%	38%	\$0.01	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	Existing	14,121.02	3	\$883.56	8%	38%	\$0.02	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	42,139.08	10	\$7,959.50	8%	38%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	3,996.38	8	\$6,189.90	10%	50%	\$0.25	0	0	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	2,835.48	8	\$2,195.30	5%	25%	\$0.13	0	0	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$7,783.78	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$8,372.82	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$32.17	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	72,354.14	17	\$5,583.53	5%	6%	\$0.01	0	0	E3T Website
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	11,375.55	10	\$2,623.47	15%	36%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	Existing	69,301.65	17	\$40,302.40	25%	44%	\$0.06	1	1	RSMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$11,221.51	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$5,425.13	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	68,651.65	10	\$13,033.19	8%	38%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	Existing	69,347.78	15	\$15,889.30	8%	38%	\$0.03	0	0	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	Existing	36,147.92	3	\$4,519.29	8%	38%	\$0.05	0	0	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	112,361.50	12	\$44,138.60	8%	38%	\$0.05	1	1	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	Existing	27,362.49	3	\$8,677.24	5%	39%	\$0.09	1	1	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	Existing	25,068.80	3	\$1,467.66	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$3,148.16	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	Existing	8,365.98	10	\$6,952.19	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$4,202.50	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	New	27,086.99	3	\$8,677.24	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	New	63,746.51	10	\$1,940.38	15%	75%	\$0.00	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	65,656.03	15	\$37,577.46	15%	50%	\$0.06	0	0	OH - TRM
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	16,732.51	15	\$5,447.41	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,930.86	5	\$334.12	15%	50%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	New	30,657.14	20	\$23,405.78	15%	50%	\$0.07	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	16,760.32	15	\$5,489.48	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	35,103.80	10	\$12,181.80	15%	50%	\$0.05	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$18,562.27	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	New	27,739.12	15	\$12,909.44	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	New	16,020.59	3	\$1,376.08	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	45,385.08	15	\$20,653.62	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$4,949.94	15%	50%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	81,586.59	10	\$10,659.69	8%	38%	\$0.02	0	0	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	New	27,578.66	15	\$3,108.56	8%	38%	\$0.01	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	New	13,900.23	3	\$883.56	8%	38%	\$0.02	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	New	41,392.65	10	\$7,959.50	8%	38%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	3,944.13	8	\$6,189.90	10%	50%	\$0.25	0	0	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2,798.48	8	\$2,195.30	5%	25%	\$0.13	0	0	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$7,783.78	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$8,372.82	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$32.17	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	72,296.77	17	\$5,583.53	5%	6%	\$0.01	0	0	E3T Website
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	11,323.02	10	\$2,623.47	15%	36%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	New	70,469.76	17	\$24,180.45	25%	44%	\$0.04	0	0	RSMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$11,221.51	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$5,425.13	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	68,397.93	10	\$13,033.19	8%	38%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	New	69,361.51	15	\$15,889.30	8%	38%	\$0.03	0	0	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	New	35,354.05	3	\$4,519.29	8%	38%	\$0.05	0	0	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	New	109,664.78	12	\$44,138.60	8%	38%	\$0.05	0	0	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	New	25,096.44	3	\$1,331.53	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$3,148.16	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	New	2,192.52	32	\$22,294.52	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$4,202.50	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$4,049.05	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$9.90	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$44.55	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$51.97	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$113,724.84	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$34.65	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,616.15	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$178.20	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,640.90	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$111.37	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$433.12	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	Existing	0.00	10	\$2,544.27	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$87,193.17	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,952.53	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$66.82	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$6,073.57	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$29,694.68	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	Existing	271.11	5	\$74.25	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,703.87	10	\$1,467.66	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	Existing	2,057.40	5	\$2,875.91	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	5,285.57	15	\$2,526.94	15%	50%	\$0.06	0	0	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	Existing	10,137.79	18	\$6,063.67	15%	50%	\$0.06	0	0	AEG study for State of New Mexico

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Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	Existing	3,558.74	3	\$336.60	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	10,425.14	15	\$5,053.89	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	Existing	1,035.76	3	\$8,677.24	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Strategic Energy Management	per Facility	Existing	3,078.36	3	\$1,467.66	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	Existing	1,061.26	10	\$6,952.19	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$4,049.05	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$9.90	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$44.55	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$51.97	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Commissioning	per Facility	New	1,037.80	3	\$8,677.24	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$113,724.84	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$34.65	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,616.15	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$178.20	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,640.90	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$111.37	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$433.12	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	New	0.00	10	\$2,544.27	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	New	0.00	10	\$87,193.17	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,952.53	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$66.82	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$6,073.57	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$29,694.68	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	New	271.39	5	\$74.25	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,703.89	10	\$1,467.66	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	New	2,050.89	5	\$2,875.91	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	5,156.91	15	\$2,526.94	15%	50%	\$0.06	0	0	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	New	10,180.34	18	\$6,063.67	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	New	3,560.21	3	\$336.60	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	10,588.29	15	\$5,053.89	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Strategic Energy Management	per Facility	New	3,078.36	3	\$1,331.53	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	New	277.18	32	\$22,294.52	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$34,978.74	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	Existing	656.43	3	\$1,467.66	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	Existing	226.53	10	\$6,952.19	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	240.44	15	\$54.45	15%	35%	\$0.02	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	7,471.18	20	\$8,974.16	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$23,910.68	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	New	252.06	3	\$1,331.53	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	New	23.77	32	\$22,294.52	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	92.36	15	\$24.75	15%	35%	\$0.03	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,406.81	20	\$5,650.28	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	37,045.32	23	\$60,765.87	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,659.73	10	\$2,408.36	15%	45%	\$0.04	0	0	BEST Simulation

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Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,684.51	15	\$1,074.56	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	489.96	15	\$425.82	15%	75%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	17,736.72	15	\$985,387.77	15%	50%	\$5.61	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	15,673.55	12	\$28,578.50	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	Existing	4,639.67	15	\$36,183.07	20%	50%	\$0.18	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	35,755.39	23	\$54,734.04	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	15,122.15	18	\$18,325.11	15%	75%	\$0.10	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	948.33	18	\$1,740.84	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	Existing	6,267.50	10	\$11,777.56	18%	30%	\$0.08	0	0	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	11,441.99	45	\$149,274.73	15%	25%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,733.96	20	\$2,825.41	15%	25%	\$0.08	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	882.32	45	\$19,905.63	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	Existing	29,025.23	23	\$62,347.14	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,091.51	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	Existing	1,440.64	10	\$4,104.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	29,710.90	23	\$12,515.98	3%	at stock turnover	\$0.04	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,393.13	10	\$2,420.89	15%	45%	\$0.04	0	0	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	11,200.61	4	\$1,464.05	15%	50%	\$0.03	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,006.31	15	\$1,330.05	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	428.06	15	\$386.99	15%	75%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	28,299.75	23	\$46,150.51	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,544.62	23	\$92,037,829.50	6%	at stock turnover	\$6,202.36	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	9,329.28	10	\$2,557.40	15%	45%	\$0.04	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,129.16	15	\$716.37	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$27,807.02	15%	75%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,729.01	15	\$985,387.77	15%	50%	\$12.67	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	New	9,189.40	12	\$19,534.92	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	New	2,732.94	15	\$29,447.66	20%	50%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	27,294.04	23	\$41,569.45	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	New	9,891.32	18	\$13,661.17	15%	75%	\$0.11	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	821.86	18	\$1,182.26	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	New	3,584.61	10	\$7,324.03	18%	30%	\$0.09	0	0	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	571.78	45	\$109,080.22	15%	25%	\$0.14	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	New	1,615.21	20	\$820.32	15%	25%	\$0.20	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	92.73	45	\$12,177.08	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	New	17,264.58	23	\$36,906.86	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$5,610.75	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	New	213.52	32	\$12,748.17	15%	52%	\$0.38	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	19,350.28	23	\$9,488.81	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,532.08	10	\$1,574.27	15%	45%	\$0.04	0	0	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	6,007.47	4	\$946.81	15%	50%	\$0.04	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	736.08	15	\$587.38	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$54,961.54	15%	75%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	Existing	135.17	15	\$36,183.07	20%	50%	\$0.18	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	445.63	5	\$85.16	15%	25%	\$0.03	0	0	Illinois TRM
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.93	10	\$199.13	33%	60%	\$0.11	0	0	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,354.10	10	\$1,358.85	15%	30%	\$0.06	0	0	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	0	0	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	114.40	15	-\$179.76	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.16	10	\$4,104.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	New	122.62	15	\$29,447.66	20%	50%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	403.06	5	\$83.91	15%	25%	\$0.03	0	0	Illinois TRM
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	165.02	10	\$121.48	44%	60%	\$0.06	0	0	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,130.06	10	\$1,352.59	15%	30%	\$0.06	0	0	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.96	32	\$12,748.17	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	5,198.08	23	\$67,024.77	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$28,578.50	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	Existing	17,477.12	15	\$36,183.07	20%	50%	\$0.18	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,467.62	23	\$51,583.15	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	Existing	3,039.26	18	\$18,325.11	15%	75%	\$0.10	0	0	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,784.07	18	\$1,740.84	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	70,537.09	45	\$149,274.73	15%	25%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	836.47	20	\$2,825.41	15%	25%	\$0.08	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	26,517.49	45	\$19,905.63	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,091.51	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	Existing	5,306.83	10	\$4,104.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	8,012.59	23	\$59,105.34	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$19,534.92	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	New	16,743.53	15	\$29,447.66	20%	50%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,808.14	23	\$39,176.41	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	New	1,891.59	18	\$13,661.17	15%	75%	\$0.11	0	0	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	906.39	18	\$1,182.26	15%	25%	\$0.07	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	New	67,811.47	45	\$109,080.22	15%	25%	\$0.14	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	New	-1,405.20	20	\$820.32	15%	25%	\$0.20	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	19,031.08	45	\$12,177.08	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$5,610.75	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	New	1,360.62	32	\$12,748.17	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	Existing	767.64	15	\$36,183.07	20%	50%	\$0.18	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	2	3	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,961.91	5	\$576.10	5%	40%	\$0.03	0	0	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,823.90	5	\$767.72	15%	50%	\$0.03	0	0	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,791.78	12	\$5,163.64	3%	25%	\$0.10	0	0	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	823.52	16	\$95.18	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,309.91	10	\$3,404.02	7%	60%	\$0.07	0	1	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$154,045.11	15%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,828.07	8	\$445.85	7%	15%	\$0.03	0	0	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	283.34	5	\$23.80	10%	25%	\$0.01	0	0	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	1	1	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	237.10	15	-\$138.61	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.64	10	\$4,104.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	New	714.94	15	\$29,447.66	20%	50%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	0	0	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,382.36	5	\$574.85	5%	40%	\$0.04	0	0	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,318.21	5	\$767.72	15%	50%	\$0.04	0	0	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,455.58	12	\$4,854.30	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	740.15	16	\$95.18	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,783.23	10	\$3,499.20	22%	60%	\$0.07	0	0	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$154,045.11	18%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,643.22	8	\$434.58	7%	15%	\$0.03	0	0	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.42	5	\$23.80	10%	25%	\$0.01	0	0	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.09	32	\$12,748.17	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$626.20	0%	0%	\$10.00	0	0	MI - TRM
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	Existing	2,674.79	3	\$3,261.25	10%	40%	\$0.07	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	802.94	10	\$4,104.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$626.20	0%	0%	\$10.00	0	0	MI - TRM
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	New	2,676.47	3	\$3,261.25	10%	40%	\$0.07	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	217.44	32	\$12,748.17	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

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Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	4,164.29	10	\$126.49	15%	75%	\$0.00	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,410.83	15	\$2,454.70	15%	50%	\$0.06	0	0	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,089.81	15	\$355.68	15%	38%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	127.54	5	\$21.29	15%	50%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	2,034.02	20	\$1,529.18	15%	50%	\$0.07	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,091.24	15	\$358.19	15%	38%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	Existing	1,866.15	15	\$842.86	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,044.06	3	\$90.17	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	3,057.36	15	\$1,348.83	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	34,334.88	10	\$4,462.30	8%	38%	\$0.02	1	1	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	Existing	11,561.02	15	\$1,301.24	8%	38%	\$0.01	0	0	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	Existing	5,920.71	3	\$370.71	8%	38%	\$0.02	0	0	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	17,668.21	10	\$3,331.38	8%	38%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,327.83	8	\$1,993.82	10%	50%	\$0.25	0	0	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	942.12	8	\$706.35	5%	25%	\$0.13	0	0	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$3,938.80	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$417.05	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.25	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	23,460.87	17	\$1,798.45	5%	6%	\$0.01	0	0	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	3,705.12	10	\$844.12	15%	36%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	22,962.73	17	\$12,977.36	25%	44%	\$0.06	2	2	RSMeans 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$559.82	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$270.52	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	8,132.79	10	\$1,541.70	8%	38%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	Existing	8,215.26	15	\$1,878.60	8%	38%	\$0.03	0	0	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	Existing	4,282.24	3	\$534.77	8%	38%	\$0.05	0	0	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	13,302.55	12	\$5,220.00	8%	38%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	Existing	9,083.79	3	\$3,261.25	10%	40%	\$0.07	1	1	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$156.55	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	Existing	2,765.54	10	\$4,104.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,685.14	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	New	9,002.18	3	\$3,261.25	10%	40%	\$0.07	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	4,164.29	10	\$126.49	15%	75%	\$0.00	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	4,380.25	15	\$2,454.70	15%	50%	\$0.06	0	0	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,088.08	15	\$355.68	15%	38%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	126.30	5	\$21.29	15%	50%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	2,045.19	20	\$1,529.18	15%	50%	\$0.07	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,102.78	15	\$358.19	15%	38%	\$0.04	0	0	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	New	1,850.65	15	\$842.86	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	New	1,047.96	3	\$90.17	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	3,028.01	15	\$1,348.83	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	34,193.88	10	\$4,462.30	8%	38%	\$0.02	0	0	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	New	11,558.54	15	\$1,301.24	8%	38%	\$0.01	0	0	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	New	5,825.73	3	\$370.71	8%	38%	\$0.02	0	0	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	17,348.07	10	\$3,331.38	8%	38%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,312.41	8	\$1,993.82	10%	50%	\$0.25	0	0	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	931.20	8	\$706.35	5%	25%	\$0.13	0	0	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$3,938.80	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$417.05	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.25	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	23,463.45	17	\$1,798.45	5%	6%	\$0.01	0	0	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	3,687.40	10	\$844.12	15%	36%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	New	22,978.96	17	\$7,786.17	25%	44%	\$0.04	0	0	RSMeans 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$559.82	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$270.52	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	8,099.39	10	\$1,541.70	8%	38%	\$0.03	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	New	8,213.50	15	\$1,878.60	8%	38%	\$0.03	0	0	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	New	4,186.47	3	\$534.77	8%	38%	\$0.05	0	0	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	12,986.00	12	\$5,220.00	8%	38%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$156.55	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	New	729.56	32	\$12,748.17	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,685.14	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$478.42	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$15.03	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$70.13	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$83.91	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$57,547.75	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$53.85	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,606.24	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$289.30	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,648.82	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$256.74	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$219.17	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$1,287.47	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$44,122.03	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$5,028.38	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$86.42	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$13,970.51	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$37,779.88	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	Existing	685.48	5	\$185.36	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	6,790.69	10	\$3,703.34	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	Existing	2,668.73	5	\$3,660.76	15%	75%	\$0.33	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,192.01	15	\$584.87	15%	50%	\$0.06	0	0	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	Existing	2,351.23	18	\$1,403.94	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	Existing	825.37	3	\$77.65	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	2,451.75	15	\$1,169.74	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	Existing	979.10	3	\$3,261.25	10%	40%	\$0.07	1	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	Existing	1,355.15	10	\$4,104.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$478.42	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$15.03	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$70.13	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$83.91	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Commissioning	per Facility	New	979.94	3	\$3,261.25	10%	40%	\$0.07	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$57,547.75	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$53.85	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,606.24	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$289.30	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,648.82	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$256.74	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$219.17	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	New	0.00	10	\$1,287.47	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$44,122.03	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$5,028.38	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$86.42	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$13,970.51	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$37,779.88	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	New	685.91	5	\$185.36	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	6,770.36	10	\$3,703.34	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	New	2,658.79	5	\$3,660.76	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,195.54	15	\$584.87	15%	50%	\$0.06	0	0	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	New	2,360.13	18	\$1,403.94	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	New	825.37	3	\$77.65	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	2,454.71	15	\$1,169.74	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	New	359.33	32	\$12,748.17	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$28,578.50	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	185.40	10	\$4,104.11	15%	24%	\$0.05	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	196.78	15	\$43.83	15%	35%	\$0.02	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,103.99	20	\$7,331.93	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$19,534.92	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	New	19.45	32	\$12,748.17	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	75.56	15	\$21.29	15%	35%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,600.38	20	\$4,616.31	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	41,801.25	23	\$68,567.07	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,754.43	10	\$2,717.18	15%	45%	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,897.46	15	\$1,212.57	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	551.90	15	\$480.73	15%	75%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	19,979.08	15	\$545,795.01	15%	50%	\$2.75	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	17,655.01	12	\$32,247.55	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	5,226.22	15	\$40,604.43	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	40,345.72	23	\$61,760.87	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	17,033.83	18	\$20,678.19	15%	75%	\$0.10	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,068.22	18	\$1,963.84	15%	25%	\$0.07	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	7,059.82	10	\$13,289.71	18%	30%	\$0.08	0	0	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	12,888.48	45	\$168,438.94	15%	25%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,079.58	20	\$3,187.50	15%	25%	\$0.08	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	993.86	45	\$22,460.28	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	32,751.53	23	\$70,351.35	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	4,763.47	3	\$665.94	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,158.46	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,622.76	10	\$3,091.77	15%	24%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,454.19	10	\$2,731.75	15%	45%	\$0.04	0	0	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	12,616.56	4	\$1,651.68	15%	50%	\$0.03	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,259.95	15	\$1,500.45	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	482.17	15	\$437.02	15%	75%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	31,932.91	23	\$52,075.37	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,742.92	23	\$59,345,702.94	6%	at stock turnover	\$3,544.25	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	10,512.91	10	\$2,885.75	15%	45%	\$0.04	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,272.42	15	\$808.15	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$15,401.99	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	8,709.69	15	\$545,795.01	15%	50%	\$6.22	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	10,355.34	12	\$22,042.68	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	New	3,079.69	15	\$33,005.75	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	30,798.09	23	\$46,906.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	11,146.31	18	\$15,415.86	15%	75%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	926.14	18	\$1,333.97	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	4,039.41	10	\$8,264.62	18%	30%	\$0.09	0	0	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	644.33	45	\$123,084.13	15%	25%	\$0.14	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,820.15	20	\$926.08	15%	25%	\$0.20	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	104.50	45	\$13,739.91	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	19,481.03	23	\$41,645.01	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	2,793.35	3	\$540.38	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,107.73	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	240.61	32	\$9,049.88	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	21,834.49	23	\$10,707.00	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,107.11	10	\$1,777.23	15%	45%	\$0.04	0	0	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	6,769.69	4	\$1,068.98	15%	50%	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	829.48	15	\$662.47	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$30,442.57	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$40,604.43	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$84.63	15%	25%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$199.09	33%	60%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,358.24	15%	30%	\$0.06	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	1	1	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	0	0	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$665.94	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$3,091.77	15%	24%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$33,005.75	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$84.63	15%	25%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$122.09	44%	60%	\$0.06	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,352.00	15%	30%	\$0.06	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	49.71	15	\$0.93	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$540.38	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$9,049.88	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	5,865.41	23	\$75,629.51	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$32,247.55	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	Existing	19,686.38	15	\$40,604.43	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,656.03	23	\$58,205.47	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	3,423.45	18	\$20,678.19	15%	75%	\$0.10	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,009.59	18	\$1,963.84	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	79,453.53	45	\$168,438.94	15%	25%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	942.21	20	\$3,187.50	15%	25%	\$0.08	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	29,869.50	45	\$22,460.28	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	17,299.03	3	\$665.94	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,158.46	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	5,977.65	10	\$3,091.77	15%	24%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,041.25	23	\$66,693.37	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	De-stratification Fans (HVLS)	per Facility	New	0.00	12	\$22,042.68	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	New	18,867.83	15	\$33,005.75	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,553.79	23	\$44,205.93	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,131.58	18	\$15,415.86	15%	75%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,021.39	18	\$1,333.97	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	76,414.84	45	\$123,084.13	15%	25%	\$0.14	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,583.48	20	\$926.08	15%	25%	\$0.20	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	21,445.59	45	\$13,739.91	45%	50%	\$0.06	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	16,614.07	3	\$540.38	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,107.73	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,533.24	32	\$9,049.88	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$40,604.43	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	4	5	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,831.74	5	\$575.76	5%	40%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,942.43	5	\$767.91	15%	50%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,163.13	3%	25%	\$0.10	0	1	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	822.11	16	\$95.04	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,403.94	7%	60%	\$0.07	1	1	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$85,323.83	15%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$446.04	7%	15%	\$0.03	0	0	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	282.87	5	\$24.28	10%	25%	\$0.01	0	0	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	2	2	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$665.94	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$3,091.77	15%	24%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$33,005.75	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	1	1	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,379.22	5	\$575.07	5%	40%	\$0.04	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,313.83	5	\$767.22	15%	50%	\$0.04	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$4,853.75	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	739.17	16	\$94.34	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,498.97	22%	60%	\$0.07	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$85,323.83	18%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$434.25	7%	15%	\$0.03	0	0	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.13	5	\$23.59	10%	25%	\$0.01	0	0	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	0	0	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	53.40	15	-\$8.60	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	712.73	3	\$540.38	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$9,049.88	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$346.84	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,731.84	3	\$1,146.67	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,504.50	3	\$665.94	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	519.88	10	\$3,091.77	15%	24%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$346.84	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	1,733.64	3	\$1,146.67	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,504.50	3	\$540.38	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	140.67	32	\$9,049.88	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	1,225.51	10	\$37.46	15%	75%	\$0.00	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	1,256.10	15	\$722.13	15%	50%	\$0.06	0	0	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	320.16	15	\$104.75	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	37.47	5	\$6.24	15%	50%	\$0.04	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	585.38	20	\$450.20	15%	50%	\$0.07	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	320.58	15	\$105.44	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	680.70	10	\$234.47	15%	50%	\$0.05	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$5,202.67	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	536.60	15	\$248.34	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	306.72	3	\$26.36	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	879.05	15	\$396.79	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,387.38	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	5,446.83	10	\$708.95	8%	38%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	1,834.02	15	\$206.72	8%	38%	\$0.01	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	939.25	3	\$58.96	8%	38%	\$0.02	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	2,802.86	10	\$529.29	8%	38%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	376.12	8	\$523.74	10%	50%	\$0.23	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	266.86	8	\$185.91	5%	25%	\$0.12	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$2,181.65	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$513.33	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$2.08	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	6,610.37	17	\$472.40	5%	6%	\$0.01	0	0	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,049.44	10	\$221.98	15%	36%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	6,520.18	17	\$3,411.57	25%	44%	\$0.06	1	1	RSMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$688.14	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$332.97	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$488.36	8%	38%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$595.19	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$169.26	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$1,653.76	8%	38%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	2,575.38	3	\$1,146.67	5%	39%	\$0.07	0	1	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	2,295.61	3	\$665.94	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$192.85	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	784.52	10	\$3,091.77	15%	24%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$704.09	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	New	2,370.15	3	\$1,146.67	5%	39%	\$0.07	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	1,225.51	10	\$37.46	15%	75%	\$0.00	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	1,262.22	15	\$722.13	15%	50%	\$0.06	0	0	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	319.78	15	\$104.75	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	37.67	5	\$6.24	15%	50%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	589.37	20	\$450.20	15%	50%	\$0.07	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	324.11	15	\$105.44	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	674.86	10	\$234.47	15%	50%	\$0.05	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$5,202.67	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	533.28	15	\$248.34	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	307.99	3	\$26.36	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	872.51	15	\$396.79	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,387.38	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	5,426.70	10	\$708.95	8%	38%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	New	1,834.38	15	\$206.72	8%	38%	\$0.01	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	924.57	3	\$58.96	8%	38%	\$0.02	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	2,753.22	10	\$529.29	8%	38%	\$0.03	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	345.11	8	\$523.74	10%	50%	\$0.25	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	244.87	8	\$185.91	5%	25%	\$0.13	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$2,181.65	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$513.33	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$2.08	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	6,158.06	17	\$472.40	5%	6%	\$0.01	0	0	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	972.39	10	\$221.98	15%	36%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	6,059.23	17	\$2,047.08	25%	44%	\$0.04	0	0	RSMMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$688.14	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$332.97	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,562.36	10	\$488.36	8%	38%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	2,598.45	15	\$595.19	8%	38%	\$0.03	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,324.45	3	\$169.26	8%	38%	\$0.05	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	4,108.32	12	\$1,653.76	8%	38%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	2,137.65	3	\$540.38	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$192.85	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	191.84	32	\$9,049.88	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$704.09	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$151.92	0%	0%	\$10.00	0	0	PA - TRM
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$24.28	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$115.85	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$138.04	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$31,875.04	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$88.79	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$4,268.27	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$473.79	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$4,337.64	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$60.35	0%	0%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$121.40	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$713.11	0%	0%	\$10.00	0	0	OPA - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$24,438.69	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,609.36	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$27.75	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,282.54	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$12,092.40	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	212.33	5	\$57.58	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,101.57	10	\$1,149.44	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	846.18	5	\$1,171.64	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,005.64	15	\$494.60	15%	50%	\$0.06	0	0	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,983.63	18	\$1,186.21	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	696.33	3	\$65.90	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	2,068.42	15	\$988.51	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	352.80	3	\$1,146.67	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	1,253.60	3	\$665.94	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	432.70	10	\$3,091.77	15%	24%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$151.92	0%	0%	\$10.00	0	0	PA - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$24.28	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$115.85	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$138.04	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	New	443.39	3	\$1,146.67	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$31,875.04	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$88.79	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$4,268.27	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$473.79	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$4,337.64	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$60.35	0%	0%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$121.40	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$713.11	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$24,438.69	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,609.36	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$27.75	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,282.54	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$12,092.40	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	212.55	5	\$57.58	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,095.42	10	\$1,149.44	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	925.87	5	\$1,171.64	15%	75%	\$0.30	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,035.89	15	\$494.60	15%	50%	\$0.06	0	0	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	1,991.96	18	\$1,186.21	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	696.62	3	\$65.90	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	2,044.93	15	\$988.51	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	New	1,378.08	3	\$540.38	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	125.13	32	\$9,049.88	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$32,247.55	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	605.16	3	\$665.94	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	208.83	10	\$3,091.77	15%	24%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	221.66	15	\$49.25	15%	35%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$22,042.68	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	232.37	3	\$540.38	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	21.91	32	\$9,049.88	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	85.15	15	\$23.59	15%	35%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,062.61	20	\$5,208.96	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	32,658.92	23	\$53,570.81	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	17,945.29	23	\$7,292.59	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,621.04	10	\$2,123.20	15%	45%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,482.47	15	\$947.30	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	431.19	15	\$375.70	15%	75%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	15,609.46	15	\$178,609.35	15%	50%	\$1.15	0	0	BEST Simulation
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,793.70	12	\$25,194.63	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	Existing	4,083.20	15	\$32,104.28	20%	50%	\$0.18	0	0	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	31,521.73	23	\$48,253.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	Existing	13,308.37	18	\$16,155.66	15%	75%	\$0.10	0	0	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	834.59	18	\$1,534.34	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	Existing	5,515.77	10	\$10,383.31	18%	30%	\$0.08	0	0	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,069.65	45	\$131,599.77	15%	25%	\$0.16	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,406.05	20	\$2,490.27	15%	25%	\$0.08	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	776.49	45	\$17,548.35	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	Existing	3,721.65	3	\$983.17	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$473.99	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	Existing	1,267.85	10	\$4,650.93	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	26,192.95	23	\$11,034.01	3%	at stock turnover	\$0.04	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,386.47	10	\$2,134.32	15%	45%	\$0.04	0	0	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	9,857.20	4	\$1,290.54	15%	50%	\$0.03	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,765.68	15	\$1,172.04	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	376.72	15	\$341.42	15%	75%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	24,948.88	23	\$40,686.00	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,361.72	23	\$11,659,634.93	6%	at stock turnover	\$891.27	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,213.64	10	\$2,254.41	15%	45%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	994.13	15	\$631.53	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$6,300.36	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	6,804.80	15	\$178,609.35	15%	50%	\$2.60	0	0	BEST Simulation
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	New	8,090.53	12	\$17,221.68	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	New	2,406.13	15	\$26,166.00	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	24,062.26	23	\$36,647.37	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	New	8,708.51	18	\$12,044.10	15%	75%	\$0.11	0	0	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	723.58	18	\$1,042.19	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	New	3,155.95	10	\$6,457.22	18%	30%	\$0.09	0	0	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	New	503.41	45	\$96,164.38	15%	25%	\$0.14	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	New	1,422.07	20	\$723.25	15%	25%	\$0.20	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	81.64	45	\$10,734.95	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	RTU - EER 12.0	per Facility	New	15,220.35	23	\$32,536.86	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	New	2,182.42	3	\$885.56	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,271.24	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	New	187.99	32	\$14,821.76	15%	52%	\$0.64	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	17,059.08	23	\$8,365.28	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,990.14	10	\$1,388.38	15%	45%	\$0.04	0	0	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,289.09	4	\$834.93	15%	50%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	648.06	15	\$517.35	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$12,452.71	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$32,104.28	20%	50%	\$0.18	0	0	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$84.90	15%	25%	\$0.03	0	0	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$198.86	33%	60%	\$0.11	0	0	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,358.64	15%	30%	\$0.06	0	0	1 AEG research & analysis
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	2	2	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	1	1	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	1	3	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	23.29	15	\$5.86	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$983.17	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$4,650.93	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$26,166.00	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$84.45	15%	25%	\$0.03	0	0	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$121.90	44%	60%	\$0.06	0	0	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,352.06	15%	30%	\$0.06	0	0	AEG research & analysis
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	0	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013

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Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$885.56	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$14,821.76	15%	52%	\$0.64	0	0	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,582.59	23	\$59,088.63	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,194.63	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	Existing	15,380.78	15	\$32,104.28	20%	50%	\$0.18	1	1	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,293.84	23	\$45,475.39	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	Existing	2,674.71	18	\$16,155.66	15%	75%	\$0.10	0	0	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,570.07	18	\$1,534.34	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	Existing	62,076.29	45	\$131,599.77	15%	25%	\$0.16	1	1	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	Existing	736.14	20	\$2,490.27	15%	25%	\$0.08	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	23,336.76	45	\$17,548.35	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	Existing	13,515.57	3	\$983.17	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$473.99	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Heating	Transformer - High Efficiency	per Facility	Existing	4,670.28	10	\$4,650.93	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,063.85	23	\$52,106.90	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,221.68	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	New	14,741.26	15	\$26,166.00	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,120.42	23	\$34,537.68	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	New	1,665.38	18	\$12,044.10	15%	75%	\$0.11	0	0	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	798.00	18	\$1,042.19	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	New	59,702.20	45	\$96,164.38	15%	25%	\$0.14	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	New	-1,237.16	20	\$723.25	15%	25%	\$0.20	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	New	16,755.24	45	\$10,734.95	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	New	12,980.41	3	\$885.56	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,271.24	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Heating	Transformer - High Efficiency	per Facility	New	1,197.91	32	\$14,821.76	15%	52%	\$0.64	0	0	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$32,104.28	20%	50%	\$0.18	0	0	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	16	18	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,831.74	5	\$575.92	5%	40%	\$0.03	0	1	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,942.43	5	\$767.97	15%	50%	\$0.03	1	1	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,163.28	3%	25%	\$0.10	1	2	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	821.76	16	\$95.12	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,403.97	7%	60%	\$0.07	2	4	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$27,921.90	15%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$446.30	7%	15%	\$0.03	0	0	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	283.05	5	\$24.06	10%	25%	\$0.01	0	0	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	8	9	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	2	3	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$983.17	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$4,650.93	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$26,166.00	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	2	3	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,485.37	5	\$575.46	5%	40%	\$0.04	0	0	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,207.67	5	\$767.06	15%	50%	\$0.04	0	0	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$4,853.87	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	740.15	16	\$94.66	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,499.09	22%	60%	\$0.07	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$27,921.90	18%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$434.49	7%	15%	\$0.03	0	0	CA - DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.42	5	\$23.84	10%	25%	\$0.01	0	0	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	1	1	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	New	712.06	3	\$885.56	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$14,821.76	15%	52%	\$0.64	0	0	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$141.88	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	Existing	2,602.11	3	\$5,431.38	5%	39%	\$0.08	1	1	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,260.53	3	\$983.17	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	781.12	10	\$4,650.93	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$141.88	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	New	2,604.82	3	\$5,431.38	5%	39%	\$0.28	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	New	2,260.53	3	\$885.56	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	New	211.35	32	\$14,821.76	15%	52%	\$0.64	0	0	6th Plan
Wastewater	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,577.56	10	\$108.96	15%	75%	\$0.00	1	1	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	3,705.00	15	\$2,108.90	15%	50%	\$0.06	1	1	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	928.81	15	\$305.78	15%	38%	\$0.04	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	109.37	5	\$18.84	15%	50%	\$0.04	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,708.87	20	\$1,313.46	15%	50%	\$0.07	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	941.68	15	\$308.05	15%	38%	\$0.04	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,988.36	10	\$683.75	15%	50%	\$0.05	0	0	VT - TRM
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,128.19	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	Existing	1,604.85	15	\$724.38	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	Existing	895.40	3	\$77.18	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,530.34	15	\$1,159.10	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$567.52	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	247,747.49	10	\$32,250.70	8%	38%	\$0.02	42	42	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	Existing	83,419.88	15	\$9,406.50	8%	38%	\$0.01	14	14	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	Existing	42,721.70	3	\$2,675.51	8%	38%	\$0.02	7	7	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	127,487.48	10	\$24,080.48	8%	38%	\$0.03	21	22	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,359.13	8	\$3,671.16	10%	50%	\$0.25	3	3	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,673.83	8	\$1,301.66	5%	25%	\$0.13	1	1	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$892.37	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,399.05	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$5.45	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	43,174.64	17	\$3,311.36	5%	6%	\$0.01	1	1	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	6,600.57	10	\$1,555.68	15%	36%	\$0.03	4	4	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	Existing	40,814.70	17	\$23,902.51	25%	44%	\$0.06	21	22	RSMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,874.85	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$906.21	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	33,542.83	10	\$6,367.78	8%	38%	\$0.03	6	6	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	Existing	33,882.95	15	\$7,763.65	8%	38%	\$0.03	6	6	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	Existing	17,661.68	3	\$2,208.33	8%	38%	\$0.05	3	3	Scaled from Optimization

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Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	54,865.07	12	\$21,565.47	8%	38%	\$0.05	9	9	6th Plan
Wastewater	Motors	Retrocommissioning	per Facility	Existing	16,151.97	3	\$5,431.38	5%	39%	\$0.08	15	16	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	Existing	14,993.44	3	\$983.17	0%	5%	\$0.01	2	2	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$525.98	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	Existing	4,925.15	10	\$4,650.93	15%	24%	\$0.05	1	1	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$447.89	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Commissioning	per Facility	New	1,666.01	3	\$5,431.38	5%	39%	\$0.28	0	0	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$108.96	15%	75%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$2,108.90	15%	50%	\$10.00	0	0	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$305.78	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$18.84	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,313.46	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$308.05	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$683.75	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,128.19	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$724.38	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$77.18	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$1,159.10	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$567.52	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$32,250.70	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	New	0.00	15	\$9,406.50	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$2,675.51	8%	38%	\$10.00	0	0	Scaled from Optimization

Measure Data and Assumptions

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Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$24,080.48	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	238.18	8	\$3,671.16	10%	50%	\$2.60	0	0	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	169.00	8	\$1,301.66	5%	25%	\$1.30	0	0	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$892.37	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,399.05	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$5.45	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,168.24	17	\$3,311.36	5%	6%	\$0.09	0	0	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	659.41	10	\$1,555.68	15%	36%	\$0.35	0	0	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	New	4,110.62	17	\$14,341.64	25%	44%	\$0.39	0	0	RSMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,874.85	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$906.21	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$6,367.78	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$7,763.65	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$2,208.33	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$21,565.47	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	New	1,446.92	3	\$885.56	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$525.98	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	New	132.85	32	\$14,821.76	15%	52%	\$0.64	0	0	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$447.89	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,978.82	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$135.30	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$637.21	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$760.02	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$13,038.85	0%	0%	\$10.00	0	0	VT - TRM

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Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$486.93	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$23,491.40	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,608.31	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$23,875.04	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$39.95	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$49.49	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	Existing	0.00	10	\$291.70	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$9,996.95	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,304.32	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$56.52	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,167.47	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$24,824.84	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	Existing	880.73	5	\$238.36	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	8,783.69	10	\$4,767.15	15%	75%	\$0.08	3	3	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	Existing	2,545.35	5	\$2,405.37	15%	75%	\$0.22	1	1	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,478.95	15%	50%	\$10.00	0	0	Developed from RTF
Wastewater	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$3,549.49	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$197.27	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$2,957.91	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	Existing	4,274.38	3	\$5,431.38	5%	39%	\$0.08	1	1	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	Existing	3,825.57	3	\$983.17	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	Existing	1,321.92	10	\$4,650.93	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,978.82	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$135.30	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$637.21	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$760.02	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	New	779.43	3	\$5,431.38	5%	39%	\$0.28	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$13,038.85	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$486.93	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$23,491.40	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,608.31	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$23,875.04	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$39.95	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$49.49	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	New	0.00	10	\$291.70	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	New	0.00	10	\$9,996.95	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,304.32	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$56.52	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,167.47	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$24,824.84	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	New	881.64	5	\$238.36	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	8,783.76	10	\$4,767.15	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	New	1,710.96	5	\$2,405.37	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	3,098.76	15	\$1,478.95	15%	50%	\$0.06	0	0	Developed from RTF
Wastewater	Process	Refrigeration - System Controls	per Facility	New	5,958.74	18	\$3,549.49	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Maintenance	per Facility	New	2,083.86	3	\$197.27	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	6,117.20	15	\$2,957.91	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	New	2,573.54	3	\$885.56	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	New	231.24	32	\$14,821.76	15%	52%	\$0.64	0	0	6th Plan
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,194.63	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	Existing	472.81	3	\$983.17	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	Existing	163.16	10	\$4,650.93	15%	24%	\$0.05	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	173.18	15	\$38.36	15%	35%	\$0.02	0	0	6th Plan
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,221.68	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	New	181.55	3	\$885.56	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	New	17.12	32	\$14,821.76	15%	52%	\$0.64	0	0	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	66.53	15	\$18.39	15%	35%	\$0.03	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,174.08	20	\$4,069.71	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	32,658.92	23	\$53,570.81	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	17,945.29	23	\$7,292.59	6%	at stock turnover	\$0.04	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,621.04	10	\$2,123.19	15%	45%	\$0.04	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,482.47	15	\$947.32	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	431.19	15	\$375.39	15%	75%	\$0.09	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	15,609.46	15	\$449,549.41	15%	50%	\$2.90	1	1	BEST Simulation
Water	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,793.70	12	\$25,194.88	15%	50%	\$0.22	1	1	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	Existing	4,083.20	15	\$32,104.39	20%	50%	\$0.18	0	0	BEST Simulation
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	31,521.73	23	\$48,253.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	Existing	13,308.37	18	\$16,155.32	15%	75%	\$0.10	0	0	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	834.59	18	\$1,534.68	15%	25%	\$0.07	0	0	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	Existing	5,515.77	10	\$10,383.40	18%	30%	\$0.08	0	0	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,069.65	45	\$131,599.48	15%	25%	\$0.16	0	0	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,406.05	20	\$2,490.58	15%	25%	\$0.08	0	0	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	776.49	45	\$17,548.31	45%	50%	\$0.06	0	0	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	Existing	25,588.46	23	\$54,964.85	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	Existing	3,721.65	3	\$997.03	0%	5%	\$0.01	0	0	BEST Simulation
Water	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,193.01	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	Existing	1,267.85	10	\$4,717.18	15%	24%	\$0.05	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	26,192.95	23	\$11,034.01	3%	at stock turnover	\$0.04	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,386.47	10	\$2,134.62	15%	45%	\$0.04	0	0	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	9,857.20	4	\$1,290.71	15%	50%	\$0.03	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,765.68	15	\$1,171.87	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	376.72	15	\$341.68	15%	75%	\$0.09	0	0	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	24,948.88	23	\$40,686.00	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,361.72	23	\$2,143,654.32	6%	at stock turnover	\$163.86	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,213.64	10	\$2,254.60	15%	45%	\$0.04	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	994.13	15	\$631.36	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$15,857.64	15%	75%	\$10.00	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	6,804.80	15	\$449,549.41	15%	50%	\$6.56	0	0	BEST Simulation
Water	Cooling	Destratification Fans (HVLS)	per Facility	New	8,090.53	12	\$17,222.06	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	New	2,406.13	15	\$26,165.63	20%	50%	\$0.16	0	0	BEST Simulation
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	24,062.26	23	\$36,647.37	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	New	8,708.51	18	\$12,044.36	15%	75%	\$0.11	0	0	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	723.58	18	\$1,042.17	15%	25%	\$0.07	0	0	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	New	3,155.95	10	\$6,457.56	18%	30%	\$0.09	0	0	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	New	503.41	45	\$96,164.04	15%	25%	\$0.14	0	0	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	New	1,422.07	20	\$723.35	15%	25%	\$0.20	0	0	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	81.64	45	\$10,734.79	45%	50%	\$0.06	0	0	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	New	15,220.35	23	\$32,536.86	5%	at stock turnover	\$0.22	0	0	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	New	2,182.42	3	\$899.33	0%	5%	\$0.02	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,199.64	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	New	187.99	32	\$15,050.88	15%	52%	\$0.69	0	0	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	17,059.08	23	\$8,365.28	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,990.14	10	\$1,388.42	15%	45%	\$0.04	0	0	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,289.09	4	\$834.76	15%	50%	\$0.04	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	648.06	15	\$517.66	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$31,342.76	15%	75%	\$10.00	0	0	BEST Simulation
Water	Exterior Lighting	Energy Management System	per Facility	Existing	134.94	15	\$32,104.39	20%	50%	\$0.18	0	0	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	444.87	5	\$85.13	15%	25%	\$0.03	0	0	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	174.63	10	\$198.83	33%	60%	\$0.11	0	0	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,350.08	10	\$1,358.70	15%	30%	\$0.06	1	1	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	362.32	15	\$74.93	100%	at stock turnover	\$0.01	3	3	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	23.04	15	\$15.20	100%	at stock turnover	\$0.04	2	2	AEO 2013
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.79	15	\$12.88	100%	at stock turnover	\$0.03	2	4	EIA 2011/Developed from RTF
Water	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	Existing	128.74	3	\$997.03	0%	5%	\$0.01	0	0	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.09	10	\$4,717.18	15%	24%	\$0.05	0	0	6th Plan
Water	Exterior Lighting	Energy Management System	per Facility	New	122.46	15	\$26,165.63	20%	50%	\$0.16	0	0	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	402.53	5	\$84.56	15%	25%	\$0.03	0	0	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	164.80	10	\$121.70	44%	60%	\$0.06	0	0	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,127.26	10	\$1,352.42	15%	30%	\$0.06	0	0	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	362.32	15	\$74.93	100%	at stock turnover	\$0.01	0	1	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	23.04	15	\$15.20	100%	at stock turnover	\$0.07	0	0	AEO 2013
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.79	15	\$12.88	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Water	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	21.88	15	\$6.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	New	116.44	3	\$899.33	0%	5%	\$0.02	0	0	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.95	32	\$15,050.88	15%	52%	\$0.69	0	0	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,582.59	23	\$59,088.63	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Water	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,194.88	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	Existing	15,380.78	15	\$32,104.39	20%	50%	\$0.18	1	1	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,293.84	23	\$45,475.39	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	Existing	2,674.71	18	\$16,155.32	15%	75%	\$0.10	0	0	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,570.07	18	\$1,534.68	15%	25%	\$0.07	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	Existing	62,076.29	45	\$131,599.48	15%	25%	\$0.16	1	1	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	Existing	736.14	20	\$2,490.58	15%	25%	\$0.08	0	0	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	23,336.76	45	\$17,548.31	45%	50%	\$0.06	0	0	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	Existing	13,515.57	3	\$997.03	0%	5%	\$0.01	0	0	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,193.01	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	Existing	4,670.28	10	\$4,717.18	15%	24%	\$0.05	0	0	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,063.85	23	\$52,106.90	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Water	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,222.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	New	14,741.26	15	\$26,165.63	20%	50%	\$0.16	0	0	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,120.42	23	\$34,537.68	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	New	1,665.38	18	\$12,044.36	15%	75%	\$0.11	0	0	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	798.00	18	\$1,042.17	15%	25%	\$0.07	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	New	59,702.20	45	\$96,164.04	15%	25%	\$0.14	0	0	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	New	-1,237.16	20	\$723.35	15%	25%	\$0.20	0	0	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	New	16,755.24	45	\$10,734.79	45%	50%	\$0.06	0	0	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	New	12,980.41	3	\$899.33	0%	5%	\$0.02	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,199.64	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	New	1,197.91	32	\$15,050.88	15%	52%	\$0.69	0	0	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	Existing	766.33	15	\$32,104.39	20%	50%	\$0.18	0	1	BEST Simulation
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	675.16	15	\$139.64	100%	at stock turnover	\$0.01	23	26	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,956.82	5	\$575.94	5%	40%	\$0.03	1	1	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.34	5	\$767.91	15%	50%	\$0.03	1	1	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,783.59	12	\$5,163.42	3%	25%	\$0.10	2	3	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	822.11	16	\$94.85	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,300.78	10	\$3,403.62	7%	60%	\$0.07	3	6	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$70,277.81	15%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,824.92	8	\$446.24	7%	15%	\$0.03	0	0	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	282.87	5	\$24.00	10%	25%	\$0.01	0	0	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	32.89	15	\$21.70	100%	at stock turnover	\$0.04	12	13	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	51.13	15	\$20.08	100%	at stock turnover	\$0.03	2	5	EIA 2011/Developed from RTF
Water	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	Existing	793.02	3	\$997.03	0%	5%	\$0.01	0	0	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	265.19	10	\$4,717.18	15%	24%	\$0.05	0	0	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	New	714.01	15	\$26,165.63	20%	50%	\$0.16	0	0	BEST Simulation
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	675.16	15	\$139.64	100%	at stock turnover	\$0.01	4	4	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,379.22	5	\$575.36	5%	40%	\$0.04	0	0	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,313.83	5	\$767.34	15%	50%	\$0.04	0	0	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,449.74	12	\$4,853.74	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	740.15	16	\$94.85	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,776.92	10	\$3,499.03	22%	60%	\$0.07	0	0	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$70,277.81	18%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,641.05	8	\$434.24	7%	15%	\$0.03	0	0	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	217.42	5	\$24.00	10%	25%	\$0.01	0	0	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	32.89	15	\$21.70	100%	at stock turnover	\$0.07	2	2	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	51.13	15	\$20.08	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Water	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	34.10	15	\$9.37	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	New	712.06	3	\$899.33	0%	5%	\$0.02	0	0	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	New	58.02	32	\$15,050.88	15%	52%	\$0.69	0	0	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$357.10	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	Existing	2,602.11	3	\$5,561.09	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,260.53	3	\$997.03	0%	5%	\$0.01	0	0	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	781.12	10	\$4,717.18	15%	24%	\$0.05	0	0	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$357.10	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	New	2,604.82	3	\$5,561.09	5%	39%	\$0.36	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	New	2,260.53	3	\$899.33	0%	5%	\$0.02	0	0	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	New	211.35	32	\$15,050.88	15%	52%	\$0.69	0	0	6th Plan
Water	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,577.56	10	\$109.13	15%	75%	\$0.00	2	2	MI - TRM
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	3,666.87	15	\$2,108.91	15%	50%	\$0.06	1	1	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	928.81	15	\$305.68	15%	38%	\$0.04	0	0	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	109.37	5	\$18.86	15%	50%	\$0.04	0	0	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,708.87	20	\$1,313.57	15%	50%	\$0.07	0	1	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	941.68	15	\$307.97	15%	38%	\$0.04	0	0	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,987.13	10	\$683.92	15%	50%	\$0.05	1	1	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$5,356.54	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	Existing	1,603.86	15	\$724.49	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Maintenance	per Facility	Existing	892.94	3	\$77.13	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,528.80	15	\$1,159.30	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,428.41	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$1,508.97	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	Existing	0.00	15	\$439.95	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	Existing	0.00	3	\$125.13	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	0.00	10	\$1,126.73	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,980.93	8	\$3,781.86	10%	50%	\$0.21	4	4	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	2,115.01	8	\$1,340.99	5%	25%	\$0.10	1	1	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$2,246.03	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$33.14	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	54,062.88	17	\$3,411.04	5%	6%	\$0.01	2	2	E3T Website
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	8,467.36	10	\$1,602.68	15%	36%	\$0.03	6	6	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	Existing	52,423.41	17	\$24,622.94	25%	44%	\$0.05	33	33	RSMeans 2013
Water	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$44.57	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$21.71	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	121,174.21	10	\$23,003.70	8%	38%	\$0.03	30	30	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Pumping System - Controls	per Facility	Existing	122,402.91	15	\$28,045.99	8%	38%	\$0.03	31	31	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	Existing	63,803.20	3	\$7,977.39	8%	38%	\$0.05	16	16	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	196,118.93	12	\$77,905.52	8%	38%	\$0.05	48	49	6th Plan
Water	Motors	Retrocommissioning	per Facility	Existing	20,409.70	3	\$5,561.09	5%	39%	\$0.07	22	23	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	Existing	18,731.34	3	\$997.03	0%	5%	\$0.01	3	3	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$12.57	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	Existing	6,299.43	10	\$4,717.18	15%	24%	\$0.05	2	2	6th Plan
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$298.25	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Commissioning	per Facility	New	39.70	3	\$5,561.09	5%	39%	\$0.36	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$109.13	15%	75%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$2,108.91	15%	50%	\$10.00	0	0	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$305.68	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$18.86	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,313.57	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$307.97	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$683.92	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$5,356.54	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$724.49	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$77.13	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$1,159.30	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,428.41	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$1,508.97	8%	38%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Fan System - Controls	per Facility	New	0.00	15	\$439.95	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$125.13	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$1,126.73	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	5.67	8	\$3,781.86	10%	50%	\$112.54	0	0	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	4.02	8	\$1,340.99	5%	25%	\$56.28	0	0	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$2,246.03	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$33.14	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	98.11	17	\$3,411.04	5%	6%	\$3.85	0	0	E3T Website
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	15.69	10	\$1,602.68	15%	36%	\$15.07	0	0	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	New	97.78	17	\$14,773.77	25%	44%	\$16.70	0	0	RSMeans 2013
Water	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$44.57	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$21.71	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$23,003.70	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$28,045.99	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$7,977.39	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$77,905.52	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	New	34.45	3	\$899.33	0%	5%	\$0.02	0	0	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$12.57	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	New	3.22	32	\$15,050.88	15%	52%	\$0.69	0	0	6th Plan
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$298.25	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$7,148.34	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$135.41	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$637.07	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$759.91	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$32,818.02	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$486.80	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$23,491.64	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,608.28	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$23,875.03	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$40.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$124.56	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	Existing	0.00	10	\$734.20	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$25,161.74	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,304.20	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$56.57	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,167.18	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$24,824.63	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	Existing	880.73	5	\$238.26	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	8,717.12	10	\$4,767.46	15%	75%	\$0.08	4	4	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	Existing	2,545.35	5	\$2,405.44	15%	75%	\$0.22	1	1	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,478.69	15%	50%	\$10.00	0	0	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$3,549.31	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$197.12	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$2,957.95	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Retrocommissioning	per Facility	Existing	4,391.84	3	\$5,561.09	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	Existing	3,825.57	3	\$997.03	0%	5%	\$0.01	0	0	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	Existing	1,321.92	10	\$4,717.18	15%	24%	\$0.05	0	0	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$7,148.34	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$135.41	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$637.07	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$759.91	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Commissioning	per Facility	New	1,043.35	3	\$5,561.09	5%	39%	\$0.36	1	0	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$32,818.02	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$486.80	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$23,491.64	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,608.28	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$23,875.03	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$40.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$124.56	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	New	0.00	10	\$734.20	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	New	0.00	10	\$25,161.74	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,304.20	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$56.57	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,167.18	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$24,824.63	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	New	881.64	5	\$238.26	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	8,783.76	10	\$4,767.46	15%	75%	\$0.08	1	1	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	New	1,778.61	5	\$2,405.44	15%	75%	\$0.32	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	3,098.76	15	\$1,478.69	15%	50%	\$0.06	0	0	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	New	5,958.74	18	\$3,549.31	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	New	2,083.86	3	\$197.12	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	6,117.20	15	\$2,957.95	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Water	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	New	2,651.79	3	\$899.33	0%	5%	\$0.02	0	0	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	New	236.80	32	\$15,050.88	15%	52%	\$0.69	0	0	6th Plan
Water	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,194.88	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	Existing	472.81	3	\$997.03	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Ventilation	Transformer - High Efficiency	per Facility	Existing	163.16	10	\$4,717.18	15%	24%	\$0.05	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	173.18	15	\$38.28	15%	35%	\$0.02	0	0	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,381.24	20	\$6,463.79	100%	at stock turnover	\$0.13	1	1	BEST Simulation
Water	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,222.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	New	181.55	3	\$899.33	0%	5%	\$0.02	0	0	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	New	17.12	32	\$15,050.88	15%	52%	\$0.69	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	66.53	15	\$18.28	15%	35%	\$0.03	0	0	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,174.08	20	\$4,069.71	100%	at stock turnover	\$0.13	0	0	BEST Simulation

Idaho Industrial Measure Assumptions

Table H-12 Table of Idaho Industrial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	30,725.31	23	\$71,409.36	2%	at stock turnover	\$0.13	10	10	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	17,487.29	23	\$9,437.99	6%	at stock turnover	\$0.06	12	12	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,315.18	10	\$2,311.32	15%	45%	\$0.04	3	3	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,089.62	15	\$1,334.89	15%	60%	\$0.07	1	1	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	456.35	15	\$392.15	15%	75%	\$0.09	0	0	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	15,079.90	15	\$282,032.19	15%	50%	\$1.88	15	17	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,325.17	12	\$24,428.69	15%	50%	\$0.22	13	16	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	Existing	3,944.46	15	\$37,938.85	20%	50%	\$0.18	3	4	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	29,674.47	23	\$64,324.21	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	Existing	12,343.45	18	\$16,090.67	15%	75%	\$0.10	3	4	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	859.69	18	\$1,458.55	15%	25%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	Existing	5,358.58	10	\$11,348.32	18%	30%	\$0.10	3	1	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	9,075.78	45	\$159,693.38	15%	25%	\$0.16	3	3	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,461.16	20	\$2,913.88	15%	25%	\$0.07	1	1	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-132.43	45	\$21,185.39	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	Existing	24,077.05	23	\$73,267.60	4%	at stock turnover	\$0.32	3	3	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	Existing	3,607.32	3	\$808.67	0%	5%	\$0.01	1	1	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$598.62	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	Existing	1,226.21	10	\$3,783.13	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	27,447.60	23	\$14,280.09	3%	at stock turnover	\$0.05	10	10	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,737.90	10	\$2,233.53	15%	45%	\$0.04	1	2	DEER
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	11,130.04	4	\$1,452.10	15%	50%	\$0.03	2	3	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,870.42	15	\$1,903.04	15%	60%	\$0.07	1	1	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	427.80	15	\$382.83	15%	75%	\$0.09	0	0	BEST Simulation
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	22,522.92	23	\$54,163.47	2%	at stock turnover	\$0.13	4	4	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	10,517.22	23	\$4,613.04	6%	at stock turnover	\$0.05	5	5	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,602.86	10	\$2,034.95	15%	45%	\$0.04	1	1	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,378.24	15	\$981.81	15%	60%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$8,796.84	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,981.34	15	\$282,032.19	15%	50%	\$3.34	3	3	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	New	7,067.14	12	\$15,764.12	15%	50%	\$0.25	2	3	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	New	2,097.85	15	\$31,086.63	20%	50%	\$0.16	1	1	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	21,821.66	23	\$48,789.43	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	New	7,869.37	18	\$11,639.03	15%	75%	\$0.11	1	1	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	684.11	18	\$293.22	15%	25%	\$0.31	0	0	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	New	2,724.39	10	\$6,574.78	18%	30%	\$0.10	1	0	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	New	-117.13	45	\$121,219.72	15%	25%	\$0.14	0	0	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	New	1,160.10	20	\$570.66	15%	25%	\$0.28	0	0	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-34.39	45	\$2,805.98	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	New	13,774.33	23	\$43,313.59	4%	at stock turnover	\$0.33	1	1	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	New	1,906.10	3	\$693.61	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,605.88	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	New	163.77	32	\$11,611.78	15%	52%	\$0.35	0	0	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	16,611.89	23	\$10,841.89	3%	at stock turnover	\$0.07	4	4	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,907.15	10	\$1,349.58	15%	45%	\$0.04	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,645.78	4	\$882.52	15%	50%	\$0.04	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,579.72	15	\$1,250.65	15%	60%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$14,822.46	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$37,938.85	20%	50%	\$0.18	2	3	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$89.26	15%	25%	\$0.03	2	4	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.98	33%	60%	\$0.11	2	4	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.29	15%	30%	\$0.06	15	30	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	81	83	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	41	42	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	58	115	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	47.69	15	-\$13.21	100%	at stock turnover	\$0.04	6	18	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$808.67	0%	5%	\$0.01	0	1	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$3,783.13	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$31,086.63	20%	50%	\$0.16	1	1	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.90	15%	25%	\$0.03	1	1	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$127.97	44%	60%	\$0.06	0	1	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,419.84	15%	30%	\$0.06	5	7	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	37	42	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	19	21	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	27	51	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	1	4	EIA 2011/Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$693.61	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$11,611.78	15%	52%	\$0.35	0	0	6th Plan
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,593.21	23	\$44,050.12	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$24,428.69	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	Existing	19,610.67	15	\$37,938.85	20%	50%	\$0.18	24	25	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,051.13	23	\$33,825.40	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	Existing	3,451.13	18	\$16,090.67	15%	75%	\$0.10	1	1	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,412.46	18	\$1,458.55	15%	25%	\$0.07	1	1	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	Existing	79,147.86	45	\$159,693.38	15%	25%	\$0.16	33	33	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,319.35	20	\$2,913.88	15%	25%	\$0.07	1	1	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	29,753.74	45	\$21,185.39	45%	50%	\$0.06	6	6	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	Existing	17,231.98	3	\$808.67	0%	5%	\$0.01	4	4	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$598.62	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	Existing	5,954.48	10	\$3,783.13	15%	24%	\$0.05	2	2	6th Plan
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	10,484.86	23	\$38,794.63	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$15,764.12	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	New	18,825.34	15	\$31,086.63	20%	50%	\$0.16	7	7	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,379.16	23	\$25,656.29	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	New	2,241.59	18	\$11,639.03	15%	75%	\$0.11	0	0	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-742.46	18	\$293.22	15%	25%	\$0.31	0	0	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	New	76,242.80	45	\$121,219.72	15%	25%	\$0.14	10	10	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	New	-1,223.35	20	\$570.66	15%	25%	\$0.28	0	0	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,467.19	45	\$2,805.98	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	New	16,551.69	3	\$693.61	0%	5%	\$0.01	1	1	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,605.88	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	New	1,529.89	32	\$11,611.78	15%	52%	\$0.35	1	1	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$37,938.85	20%	50%	\$0.18	9	15	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	625	633	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,863.34	5	\$604.71	5%	40%	\$0.03	13	27	Illinois TRM
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,700.38	5	\$806.16	15%	50%	\$0.03	17	36	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.27	3%	25%	\$0.10	44	86	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.65	1%	3%	\$0.01	1	1	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.39	7%	60%	\$0.03	94	168	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$44,089.93	15%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$468.50	7%	15%	\$0.03	6	11	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.19	5	\$25.45	10%	25%	\$0.01	0	1	AEG research & analysis
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	317	338	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	65	129	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	87.64	15	-\$9.40	100%	at stock turnover	\$0.04	7	20	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.96	3	\$808.67	0%	5%	\$0.01	2	3	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$3,783.13	15%	24%	\$0.05	1	1	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$31,086.63	20%	50%	\$0.16	3	5	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	280	320	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,280.99	5	\$604.00	5%	40%	\$0.04	4	6	Illinois TRM
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,175.13	5	\$805.45	15%	50%	\$0.04	5	8	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,096.15	4%	25%	\$0.09	13	20	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	759.99	16	\$99.29	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.75	22%	60%	\$0.03	16	24	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$44,089.93	18%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$455.95	7%	15%	\$0.03	2	3	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.14	5	\$25.09	10%	25%	\$0.01	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	143	161	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	30	58	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	1	4	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	New	732.80	3	\$693.61	0%	5%	\$0.01	1	1	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$11,611.78	15%	52%	\$0.35	0	0	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	7,829.23	5	\$179.23	15%	33%	\$0.01	59	59	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	Existing	3,029.92	3	\$3,526.48	5%	39%	\$0.09	43	43	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,632.18	3	\$808.67	0%	5%	\$0.01	5	6	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	909.55	10	\$3,783.13	15%	24%	\$0.05	4	4	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	7,829.23	5	\$179.23	15%	33%	\$0.01	17	17	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	New	3,021.02	3	\$3,526.48	5%	39%	\$0.09	13	13	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	New	2,621.72	3	\$693.61	0%	5%	\$0.01	2	2	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	New	245.13	32	\$11,611.78	15%	52%	\$0.35	1	1	6th Plan
Agriculture	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	12,235.83	10	\$372.43	15%	75%	\$0.00	159	159	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	13,636.50	15	\$2,775.52	15%	50%	\$0.02	100	105	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	3,014.96	15	\$1,045.61	15%	38%	\$0.04	14	15	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	355.06	5	\$64.16	15%	50%	\$0.04	3	3	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	5,844.60	20	\$4,492.51	15%	50%	\$0.07	41	47	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	3,056.58	15	\$1,053.50	15%	38%	\$0.04	14	15	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	6,450.83	10	\$2,338.20	15%	50%	\$0.05	46	51	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,688.41	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	Existing	5,087.35	15	\$2,477.64	8%	38%	\$0.05	31	35	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,898.18	3	\$264.18	8%	38%	\$0.03	18	19	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	8,332.18	15	\$3,964.51	8%	38%	\$0.05	51	57	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$716.91	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	39,221.54	10	\$5,105.83	8%	38%	\$0.02	252	254	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	Existing	13,206.41	15	\$1,489.02	8%	38%	\$0.01	85	86	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	Existing	6,692.61	3	\$423.69	8%	38%	\$0.02	41	43	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	19,972.02	10	\$3,812.17	8%	38%	\$0.03	123	129	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	951.87	8	\$1,325.21	10%	50%	\$0.22	31	34	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	675.36	8	\$469.93	5%	25%	\$0.11	11	12	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	Existing	48,943.32	10	\$1,127.34	15%	35%	\$0.00	211	211	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,571.55	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$9.68	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	17,324.54	17	\$1,195.09	5%	6%	\$0.01	15	15	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,659.71	10	\$561.70	15%	36%	\$0.03	46	49	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	Existing	17,065.87	17	\$3,320.01	25%	44%	\$0.02	274	280	RSMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,445.83	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,665.74	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	6,856.38	10	\$1,376.47	8%	38%	\$0.03	42	44	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	Existing	6,924.69	15	\$1,678.29	8%	38%	\$0.03	43	45	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	Existing	3,608.70	3	\$477.46	8%	38%	\$0.05	22	23	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	11,218.26	12	\$4,661.70	8%	38%	\$0.05	67	73	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Retrocommissioning	per Facility	Existing	6,517.08	3	\$3,526.48	5%	39%	\$0.09	182	191	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	Existing	6,002.50	3	\$808.67	0%	5%	\$0.01	26	26	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$966.75	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	Existing	1,983.61	10	\$3,783.13	15%	24%	\$0.05	15	16	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$873.20	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Commissioning	per Facility	New	5,736.16	3	\$3,526.48	5%	39%	\$0.09	66	66	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	New	12,235.83	10	\$372.43	15%	75%	\$0.00	50	50	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	13,635.53	15	\$2,775.52	15%	50%	\$0.02	33	33	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	3,042.23	15	\$1,045.61	15%	38%	\$0.04	5	5	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	356.27	5	\$64.16	15%	50%	\$0.04	1	1	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	New	5,884.49	20	\$4,492.51	15%	50%	\$0.07	14	14	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	3,047.34	15	\$1,053.50	15%	38%	\$0.04	5	5	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	6,477.25	10	\$2,338.20	15%	50%	\$0.05	15	15	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,688.41	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	New	5,118.85	15	\$2,477.64	8%	38%	\$0.05	10	10	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	New	2,912.71	3	\$264.18	8%	38%	\$0.03	6	6	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	8,374.70	15	\$3,964.51	8%	38%	\$0.05	17	17	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$716.91	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	38,503.98	10	\$5,105.83	8%	38%	\$0.02	79	79	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	New	13,209.03	15	\$1,489.02	8%	38%	\$0.01	27	27	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	New	6,560.30	3	\$423.69	8%	38%	\$0.02	13	13	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	New	19,535.63	10	\$3,812.17	8%	38%	\$0.03	40	40	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	835.25	8	\$1,325.21	10%	50%	\$0.25	11	11	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	592.63	8	\$469.93	5%	25%	\$0.13	4	4	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	New	48,943.32	10	\$1,127.34	15%	35%	\$0.00	67	67	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,571.55	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$9.68	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	15,339.05	17	\$1,195.09	5%	6%	\$0.01	5	5	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,335.24	10	\$561.70	15%	36%	\$0.03	17	17	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	New	15,266.06	17	\$1,991.93	25%	44%	\$0.01	99	99	RSMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,445.83	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,665.74	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	6,679.53	10	\$1,376.47	8%	38%	\$0.03	14	14	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	New	6,773.23	15	\$1,678.29	8%	38%	\$0.03	14	14	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	New	3,504.12	3	\$477.46	8%	38%	\$0.05	7	7	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	New	10,869.71	12	\$4,661.70	8%	38%	\$0.05	22	22	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	New	5,324.66	3	\$693.61	0%	5%	\$0.01	9	9	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$966.75	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	New	464.31	32	\$11,611.78	15%	52%	\$0.35	6	6	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$873.20	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$427.64	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$7.89	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$36.56	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$43.73	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	3,341.35	10	\$16,471.00	15%	15%	\$0.66	0	0	VT - TRM
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$27.96	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,346.36	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$149.48	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,368.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	416.37	15	\$70.97	15%	16%	\$0.02	0	0	MT - IRP 2013
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	7,417.17	15	\$62.73	15%	16%	\$0.00	2	2	OPA - TRM
Agriculture	Process	Heat Lamps	per Facility	Existing	13,767.87	10	\$368.49	15%	16%	\$0.00	4	4	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	Existing	12,570.48	10	\$12,628.36	15%	16%	\$0.15	4	4	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$4,671.74	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$79.94	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,856.61	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$35,096.30	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	Existing	115.84	5	\$31.19	15%	75%	\$0.07	1	2	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,155.31	10	\$626.94	15%	75%	\$0.08	15	15	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	Existing	2,406.67	5	\$3,400.66	15%	75%	\$0.33	152	156	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	9,263.19	15	\$4,427.99	15%	50%	\$0.06	70	70	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	Existing	17,766.91	18	\$10,627.47	15%	50%	\$0.06	132	136	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	Existing	6,236.84	3	\$590.37	15%	50%	\$0.04	47	47	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	18,270.50	15	\$8,856.34	15%	50%	\$0.06	137	139	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	Existing	1,412.66	3	\$3,526.48	5%	39%	\$0.09	256	52	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	Existing	3,637.23	3	\$808.67	0%	5%	\$0.01	20	20	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	Existing	1,252.52	10	\$3,783.13	15%	24%	\$0.05	13	13	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$427.64	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$7.89	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$36.56	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$43.73	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	New	2,178.54	3	\$3,526.48	5%	39%	\$0.09	81	42	Energy Management Program Design for PC
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	3,326.58	10	\$16,471.00	15%	15%	\$0.66	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$27.96	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,346.36	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$149.48	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,368.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	New	416.32	15	\$70.97	15%	16%	\$0.02	0	0	MT - IRP 2013
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	New	7,417.17	15	\$62.73	15%	16%	\$0.00	1	1	OPA - TRM
Agriculture	Process	Heat Lamps	per Facility	New	13,765.23	10	\$368.49	15%	16%	\$0.00	1	1	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	New	12,539.59	10	\$12,628.36	15%	16%	\$0.15	1	1	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$4,671.74	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$79.94	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,856.61	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$35,096.30	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$31.19	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$626.94	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	New	2,916.77	5	\$3,400.66	15%	75%	\$0.27	48	48	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	9,037.71	15	\$4,427.99	15%	50%	\$0.06	22	22	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	New	17,841.48	18	\$10,627.47	15%	50%	\$0.06	43	43	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	New	6,239.42	3	\$590.37	15%	50%	\$0.04	15	15	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	18,556.44	15	\$8,856.34	15%	50%	\$0.06	44	44	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	New	4,420.19	3	\$693.61	0%	5%	\$0.01	6	6	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	New	394.21	32	\$11,611.78	15%	52%	\$0.35	4	4	6th Plan
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$24,428.69	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	Existing	513.37	3	\$808.67	0%	5%	\$0.01	0	1	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	Existing	177.16	10	\$3,783.13	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	188.04	15	\$40.15	15%	35%	\$0.02	1	1	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,931.74	20	\$6,559.64	100%	at stock turnover	\$0.11	15	15	BEST Simulation
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$15,764.12	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	New	182.12	3	\$693.61	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	New	17.17	32	\$11,611.78	15%	52%	\$0.35	0	0	6th Plan
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	66.73	15	\$18.64	15%	35%	\$0.03	0	0	6th Plan
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,300.94	20	\$4,060.62	100%	at stock turnover	\$0.13	2	2	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	41,262.23	23	\$95,898.46	2%	at stock turnover	\$0.13	6	6	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	23,484.37	23	\$12,674.65	6%	at stock turnover	\$0.06	7	7	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,166.78	10	\$3,104.14	15%	45%	\$0.04	2	2	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,806.24	15	\$1,792.73	15%	60%	\$0.07	1	1	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	612.86	15	\$526.71	15%	75%	\$0.09	0	0	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	20,251.40	15	\$162,389.60	15%	50%	\$0.81	9	10	BEST Simulation
Chemical Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	17,894.90	12	\$32,806.29	15%	50%	\$0.22	8	10	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	Existing	5,297.17	15	\$50,322.82	20%	50%	\$0.18	2	2	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	39,851.02	23	\$86,383.52	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	16,576.51	18	\$21,608.67	15%	75%	\$0.10	2	2	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,154.51	18	\$1,958.87	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	Existing	7,196.25	10	\$15,239.81	18%	30%	\$0.10	2	1	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	12,188.22	45	\$214,458.29	15%	25%	\$0.16	2	2	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,305.19	20	\$3,913.20	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-177.85	45	\$28,450.58	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	32,334.03	23	\$98,393.96	4%	at stock turnover	\$0.32	2	2	BEST Simulation
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	Existing	4,844.42	3	\$1,261.06	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$68.94	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,646.73	10	\$5,923.26	15%	24%	\$0.05	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	36,860.47	23	\$19,177.30	3%	at stock turnover	\$0.05	6	6	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,391.53	10	\$2,999.50	15%	45%	\$0.04	1	1	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,946.97	4	\$1,950.20	15%	50%	\$0.03	1	1	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,854.80	15	\$2,555.55	15%	60%	\$0.07	0	1	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	574.51	15	\$514.12	15%	75%	\$0.09	0	0	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	30,246.92	23	\$72,738.26	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	14,123.99	23	\$41,933.58	6%	at stock turnover	\$0.31	3	3	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,867.24	10	\$2,730.99	15%	45%	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,850.89	15	\$1,318.44	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,012.97	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	10,718.46	15	\$162,389.60	15%	50%	\$1.43	2	2	BEST Simulation
Chemical Mfg	Cooling	De-stratification Fans (HVLS)	per Facility	New	9,490.74	12	\$21,170.50	15%	50%	\$0.25	1	2	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	New	2,817.29	15	\$41,123.49	20%	50%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	29,305.17	23	\$65,521.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	10,568.08	18	\$15,630.52	15%	75%	\$0.11	0	0	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	918.72	18	\$393.59	15%	25%	\$0.31	0	0	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	New	3,658.69	10	\$8,829.47	18%	30%	\$0.10	0	0	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-157.30	45	\$162,790.62	15%	25%	\$0.14	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,557.95	20	\$766.13	15%	25%	\$0.28	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-46.19	45	\$3,768.31	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	New	18,498.09	23	\$58,167.54	4%	at stock turnover	\$0.33	1	1	BEST Simulation
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	New	2,559.78	3	\$1,106.26	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$184.93	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	New	219.93	32	\$18,517.53	15%	52%	\$0.38	0	0	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	22,308.77	23	\$14,560.01	3%	at stock turnover	\$0.07	2	2	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,247.07	10	\$1,812.33	15%	45%	\$0.04	0	0	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,581.94	4	\$1,185.31	15%	50%	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,121.47	15	\$1,679.42	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$1,706.87	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$50,322.82	20%	50%	\$0.18	1	1	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$89.16	15%	25%	\$0.03	1	2	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.87	33%	60%	\$0.11	1	2	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.38	15%	30%	\$0.06	7	13	AEG research & analysis
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	36	36	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	18	18	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	25	50	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	22.97	15	\$6.31	100%	at stock turnover	\$0.04	3	8	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$1,261.06	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$5,923.26	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$41,123.49	20%	50%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.75	15%	25%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$127.96	44%	60%	\$0.06	0	0	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,419.77	15%	30%	\$0.06	2	3	AEG research & analysis
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	16	18	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	8	9	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	12	22	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	1	2	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$1,106.26	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$18,517.53	15%	52%	\$0.38	0	0	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	8,854.28	23	\$59,156.65	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$32,806.29	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Heating	Energy Management System	per Facility	Existing	26,335.94	15	\$50,322.82	20%	50%	\$0.18	14	14	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	4,097.48	23	\$45,425.47	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	4,634.67	18	\$21,608.67	15%	75%	\$0.10	1	1	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,896.85	18	\$1,958.87	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	106,290.79	45	\$214,458.29	15%	25%	\$0.16	19	19	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,771.81	20	\$3,913.20	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	39,957.47	45	\$28,450.58	45%	50%	\$0.06	4	4	BEST Simulation
Chemical Mfg	Heating	Strategic Energy Management	per Facility	Existing	23,141.51	3	\$1,261.06	0%	5%	\$0.01	2	2	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$68.94	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	7,996.51	10	\$5,923.26	15%	24%	\$0.05	1	1	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	14,080.53	23	\$52,098.84	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$21,170.50	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Heating	Energy Management System	per Facility	New	25,281.29	15	\$41,123.49	20%	50%	\$0.16	4	4	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	9,909.77	23	\$34,454.85	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	New	3,010.33	18	\$15,630.52	15%	75%	\$0.11	0	0	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-997.08	18	\$393.59	15%	25%	\$0.31	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	102,389.47	45	\$162,790.62	15%	25%	\$0.14	6	6	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,642.88	20	\$766.13	15%	25%	\$0.28	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,999.17	45	\$3,768.31	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Heating	Strategic Energy Management	per Facility	New	22,227.92	3	\$1,106.26	0%	5%	\$0.01	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$184.93	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	New	2,054.55	32	\$18,517.53	15%	52%	\$0.38	0	0	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$50,322.82	20%	50%	\$0.18	4	7	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	273	277	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,863.34	5	\$604.73	5%	40%	\$0.03	6	12	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,700.38	5	\$806.38	15%	50%	\$0.03	7	16	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.10	3%	25%	\$0.10	19	38	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.89	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.19	7%	60%	\$0.03	41	73	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$25,386.27	15%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$468.51	7%	15%	\$0.03	3	5	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.19	5	\$25.39	10%	25%	\$0.01	0	1	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	139	148	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	28	56	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	3	9	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.96	3	\$1,261.06	0%	5%	\$0.01	1	1	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$5,923.26	15%	24%	\$0.05	0	1	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$41,123.49	20%	50%	\$0.16	1	2	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	123	140	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,381.35	5	\$604.11	5%	40%	\$0.04	2	3	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,074.77	5	\$805.55	15%	50%	\$0.04	2	3	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,096.24	4%	25%	\$0.09	6	9	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	759.99	16	\$99.48	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.79	22%	60%	\$0.03	7	11	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$25,386.27	18%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.13	7%	15%	\$0.03	1	1	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.14	5	\$25.18	10%	25%	\$0.01	0	0	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	63	70	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	13	25	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	163.72	15	-\$152.94	100%	at stock turnover	\$0.05	1	2	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	732.80	3	\$1,106.26	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$18,517.53	15%	52%	\$0.38	0	0	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$20.64	0%	0%	\$10.00	0	0	MI - TRM
Chemical Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	3,393.50	3	\$5,855.15	5%	39%	\$0.09	21	21	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,948.04	3	\$1,261.06	0%	5%	\$0.01	3	3	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	1,018.69	10	\$5,923.26	15%	24%	\$0.05	2	2	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$20.64	0%	0%	\$10.00	0	0	MI - TRM
Chemical Mfg	Miscellaneous	Commissioning	per Facility	New	3,397.03	3	\$5,855.15	5%	39%	\$0.09	6	6	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,948.04	3	\$1,106.26	0%	5%	\$0.01	1	1	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	275.63	32	\$18,517.53	15%	52%	\$0.38	1	1	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	48,802.27	10	\$1,485.61	15%	75%	\$0.00	276	276	MI - TRM
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	54,964.25	15	\$11,070.27	15%	50%	\$0.02	178	185	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	12,099.77	15	\$4,170.16	15%	38%	\$0.04	25	27	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,416.14	5	\$256.13	15%	50%	\$0.04	4	5	MI - TRM
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	23,311.03	20	\$17,918.58	15%	50%	\$0.07	72	82	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	12,116.40	15	\$4,201.53	15%	38%	\$0.04	25	27	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	25,744.66	10	\$9,326.05	15%	50%	\$0.05	81	89	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$309.59	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	20,303.02	15	\$9,882.48	8%	38%	\$0.05	54	61	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	11,590.77	3	\$1,054.05	8%	38%	\$0.03	31	34	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	33,252.84	15	\$15,811.93	8%	38%	\$0.05	89	99	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$82.56	15%	50%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	18,075.36	10	\$2,352.87	8%	38%	\$0.02	51	51	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	Existing	6,086.21	15	\$686.25	8%	38%	\$0.01	17	17	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	Existing	3,116.92	3	\$195.25	8%	38%	\$0.02	8	9	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	9,204.16	10	\$1,756.81	8%	38%	\$0.03	25	26	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,783.38	8	\$2,793.93	10%	50%	\$0.25	32	34	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,265.33	8	\$990.48	5%	25%	\$0.13	11	12	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$129.82	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,044.73	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$7.84	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	32,402.55	17	\$2,520.05	5%	6%	\$0.01	15	15	E3T Website
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	5,026.04	10	\$1,183.87	15%	36%	\$0.03	49	51	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	31,979.86	17	\$7,000.01	25%	44%	\$0.02	284	287	RSMeans 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,740.07	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,324.63	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	21,461.31	10	\$4,117.74	8%	38%	\$0.03	60	61	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Pumping System - Controls	per Facility	Existing	21,678.21	15	\$5,020.29	8%	38%	\$0.03	61	61	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	11,300.69	3	\$1,428.03	8%	38%	\$0.05	31	32	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	35,105.69	12	\$13,945.32	8%	38%	\$0.05	96	99	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	Existing	12,210.32	3	\$5,855.15	5%	39%	\$0.09	189	196	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	Existing	11,252.56	3	\$1,261.06	0%	5%	\$0.01	26	27	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$768.61	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	3,694.91	10	\$5,923.26	15%	24%	\$0.05	16	16	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,394.15	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	New	12,136.59	3	\$5,855.15	5%	39%	\$0.09	61	61	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	48,802.27	10	\$1,485.61	15%	75%	\$0.00	88	88	MI - TRM
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	54,384.95	15	\$11,070.27	15%	50%	\$0.02	57	57	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	12,062.67	15	\$4,170.16	15%	38%	\$0.04	8	8	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,420.99	5	\$256.13	15%	50%	\$0.04	1	1	MI - TRM
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	23,470.12	20	\$17,918.58	15%	50%	\$0.07	24	24	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	12,225.44	15	\$4,201.53	15%	38%	\$0.04	8	8	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	25,834.33	10	\$9,326.05	15%	50%	\$0.05	27	27	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$309.59	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	New	20,416.37	15	\$9,882.48	8%	38%	\$0.05	18	18	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	11,617.25	3	\$1,054.05	8%	38%	\$0.03	10	10	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	33,402.27	15	\$15,811.93	8%	38%	\$0.05	30	30	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$82.56	15%	50%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	17,744.67	10	\$2,352.87	8%	38%	\$0.02	16	16	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Fan System - Controls	per Facility	New	6,087.42	15	\$686.25	8%	38%	\$0.01	5	5	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	New	3,023.33	3	\$195.25	8%	38%	\$0.02	3	3	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	9,003.05	10	\$1,756.81	8%	38%	\$0.03	8	8	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,767.21	8	\$2,793.93	10%	50%	\$0.25	11	11	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,253.89	8	\$990.48	5%	25%	\$0.13	4	4	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$129.82	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,044.73	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$7.84	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	32,446.06	17	\$2,520.05	5%	6%	\$0.01	5	5	E3T Website
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	4,997.79	10	\$1,183.87	15%	36%	\$0.03	16	16	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	32,392.85	17	\$4,200.09	25%	44%	\$0.01	92	92	RSMeans 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,740.07	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,324.63	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	21,293.60	10	\$4,117.74	8%	38%	\$0.03	19	19	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	New	21,593.35	15	\$5,020.29	8%	38%	\$0.03	19	19	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	New	11,170.08	3	\$1,428.03	8%	38%	\$0.05	10	10	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	34,648.49	12	\$13,945.32	8%	38%	\$0.05	31	31	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	New	11,263.03	3	\$1,106.26	0%	5%	\$0.01	8	8	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$768.61	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	New	982.39	32	\$18,517.53	15%	52%	\$0.38	5	5	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,394.15	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,279.63	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$1,147.75	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$5,402.94	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$6,444.81	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$1,896.75	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$4,129.09	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$199,179.47	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$22,115.37	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$202,432.01	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$117.85	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$7.22	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$42.52	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$1,454.24	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$8,865.80	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$151.70	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$6,399.20	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$66,605.33	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	Existing	274.58	5	\$74.30	15%	75%	\$0.07	2	2	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,738.43	10	\$1,486.23	15%	75%	\$0.08	15	16	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	Existing	4,681.56	5	\$6,453.48	15%	75%	\$0.33	131	133	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	5,125.86	15	\$2,450.29	15%	50%	\$0.06	17	17	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	Existing	9,831.47	18	\$5,880.74	15%	50%	\$0.06	32	33	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	3,451.21	3	\$326.72	15%	50%	\$0.04	11	11	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	10,110.14	15	\$4,900.58	15%	50%	\$0.06	33	34	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	Existing	1,906.76	3	\$5,855.15	5%	39%	\$0.09	152	31	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	Existing	6,904.87	3	\$1,261.06	0%	5%	\$0.01	16	16	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	Existing	2,383.58	10	\$5,923.26	15%	24%	\$0.05	11	11	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,279.63	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$1,147.75	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$5,402.94	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$6,444.81	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Commissioning	per Facility	New	1,909.64	3	\$5,855.15	5%	39%	\$0.09	49	24	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$1,896.75	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$4,129.09	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$199,179.47	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$22,115.37	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$202,432.01	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$117.85	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$7.22	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$42.52	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$1,454.24	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$8,865.80	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$151.70	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$6,399.20	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$66,605.33	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	New	274.86	5	\$74.30	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,738.45	10	\$1,486.23	15%	75%	\$0.08	5	5	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	New	4,670.08	5	\$6,453.48	15%	75%	\$0.33	42	42	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	5,001.10	15	\$2,450.29	15%	50%	\$0.06	5	5	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	New	9,872.73	18	\$5,880.74	15%	50%	\$0.06	10	10	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	New	3,452.63	3	\$326.72	15%	50%	\$0.04	4	4	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	10,268.36	15	\$4,900.58	15%	50%	\$0.06	11	11	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	New	6,904.87	3	\$1,106.26	0%	5%	\$0.01	5	5	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	New	631.16	32	\$18,517.53	15%	52%	\$0.38	4	4	6th Plan
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$32,806.29	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	689.42	3	\$1,261.06	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	237.91	10	\$5,923.26	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	252.52	15	\$53.87	15%	35%	\$0.02	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	7,965.97	20	\$8,809.19	100%	at stock turnover	\$0.11	9	9	BEST Simulation
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$21,170.50	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	New	244.57	3	\$1,106.26	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	23.06	32	\$18,517.53	15%	52%	\$0.38	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	89.62	15	\$24.77	15%	35%	\$0.03	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,432.96	20	\$5,453.17	100%	at stock turnover	\$0.13	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	63,691.01	23	\$148,025.69	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	36,249.70	23	\$19,564.17	6%	at stock turnover	\$0.06	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	17,236.68	10	\$4,791.60	15%	45%	\$0.04	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	4,331.62	15	\$2,767.26	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	945.98	15	\$812.85	15%	75%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	31,259.39	15	\$235,127.42	15%	50%	\$0.76	2	2	BEST Simulation
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	27,621.97	12	\$50,638.76	15%	50%	\$0.22	1	2	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	8,176.54	15	\$76,683.58	20%	50%	\$0.18	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	61,512.72	23	\$133,338.75	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	25,586.95	18	\$33,354.44	15%	75%	\$0.10	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,782.06	18	\$3,023.66	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	11,107.90	10	\$23,523.80	18%	30%	\$0.10	0	0	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	18,813.33	45	\$331,030.90	15%	25%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	5,101.78	20	\$6,040.46	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-274.53	45	\$43,915.46	45%	50%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	49,909.74	23	\$151,877.66	4%	at stock turnover	\$0.32	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	7,477.68	3	\$1,192.37	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$499.06	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	2,541.83	10	\$5,501.65	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	56,896.60	23	\$29,601.44	3%	at stock turnover	\$0.05	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	16,040.02	10	\$4,629.93	15%	45%	\$0.04	0	0	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	23,071.64	4	\$3,010.22	15%	50%	\$0.03	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	5,950.14	15	\$3,944.69	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	886.79	15	\$793.42	15%	75%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	46,688.14	23	\$112,276.38	2%	at stock turnover	\$0.13	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	2,514.39	23	\$1,162,526.36	6%	at stock turnover	\$48.13	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	15,371.83	10	\$4,215.44	15%	45%	\$0.04	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	3,208.26	15	\$2,035.10	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$7,333.84	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	17,307.66	15	\$235,127.42	15%	50%	\$1.34	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	15,326.30	12	\$32,678.17	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	New	4,549.62	15	\$62,487.77	20%	50%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	45,234.49	23	\$101,136.45	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	16,312.54	18	\$24,126.86	15%	75%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,483.51	18	\$607.54	15%	25%	\$0.31	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	5,968.59	10	\$13,628.90	18%	30%	\$0.10	0	0	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-254.02	45	\$251,278.24	15%	25%	\$0.14	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	2,515.72	20	\$1,182.51	15%	25%	\$0.28	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-74.58	45	\$5,816.92	45%	50%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	28,553.04	23	\$89,785.49	4%	at stock turnover	\$0.33	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	4,135.01	3	\$953.30	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,338.80	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	355.14	32	\$15,956.57	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	34,435.08	23	\$22,474.34	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,099.20	10	\$2,797.44	15%	45%	\$0.04	0	0	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	11,703.24	4	\$1,829.80	15%	50%	\$0.04	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	3,274.63	15	\$2,592.44	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$12,357.34	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$76,683.58	20%	50%	\$0.18	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$89.05	15%	25%	\$0.03	0	0	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.89	33%	60%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.36	15%	30%	\$0.06	1	1	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	4	4	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	2	2	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	22.97	15	\$6.31	100%	at stock turnover	\$0.04	0	1	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$1,192.37	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$5,501.65	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$62,487.77	20%	50%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.76	15%	25%	\$0.03	0	0	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$127.90	44%	60%	\$0.06	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,419.79	15%	30%	\$0.06	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	2	2	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	1	1	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	1	3	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$953.30	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$15,956.57	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	13,667.18	23	\$91,312.26	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$50,638.76	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	Existing	40,651.29	15	\$76,683.58	20%	50%	\$0.18	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	6,324.73	23	\$70,117.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	7,153.92	18	\$33,354.44	15%	75%	\$0.10	0	0	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,927.92	18	\$3,023.66	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	164,066.95	45	\$331,030.90	15%	25%	\$0.16	3	3	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,734.91	20	\$6,040.46	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	61,677.04	45	\$43,915.46	45%	50%	\$0.06	1	1	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	35,720.47	3	\$1,192.37	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$499.06	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	12,343.15	10	\$5,501.65	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	21,734.24	23	\$80,418.04	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$32,678.17	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	New	39,023.37	15	\$62,487.77	20%	50%	\$0.16	1	1	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	15,296.39	23	\$53,183.37	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	4,646.64	18	\$24,126.86	15%	75%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-1,539.06	18	\$607.54	15%	25%	\$0.31	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	158,045.00	45	\$251,278.24	15%	25%	\$0.14	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-2,535.90	20	\$1,182.51	15%	25%	\$0.28	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	9,260.12	45	\$5,816.92	45%	50%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	34,310.28	3	\$953.30	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,338.80	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	3,171.33	32	\$15,956.57	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$76,683.58	20%	50%	\$0.18	0	1	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	30	31	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,863.34	5	\$604.85	5%	40%	\$0.03	1	1	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,700.38	5	\$806.27	15%	50%	\$0.03	1	2	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.26	3%	25%	\$0.10	2	4	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.81	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.26	7%	60%	\$0.03	5	8	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$36,757.34	15%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$468.58	7%	15%	\$0.03	0	1	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.19	5	\$25.40	10%	25%	\$0.01	0	0	AEG research & analysis
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	15	16	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	985.13	15	\$6.06	100%	at stock turnover	\$0.04	0	1	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.96	3	\$1,192.37	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$5,501.65	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$62,487.77	20%	50%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	14	16	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,280.99	5	\$604.25	5%	40%	\$0.04	0	0	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,175.13	5	\$805.37	15%	50%	\$0.04	0	0	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,096.12	4%	25%	\$0.09	1	1	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	759.99	16	\$99.51	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.81	22%	60%	\$0.03	1	1	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$36,757.34	18%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.03	7%	15%	\$0.03	0	0	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.14	5	\$25.10	10%	25%	\$0.01	0	0	AEG research & analysis
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	7	8	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	1	3	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	732.80	3	\$953.30	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$15,956.57	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$149.42	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	3,277.24	3	\$1,536.93	5%	39%	\$0.07	2	2	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,847.04	3	\$1,192.37	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	983.79	10	\$5,501.65	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$149.42	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	3,280.65	3	\$1,536.93	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,847.04	3	\$953.30	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	266.19	32	\$15,956.57	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	4,796.28	10	\$146.13	15%	75%	\$0.00	3	3	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	5,401.88	15	\$1,088.08	15%	50%	\$0.02	2	2	OH - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,192.40	15	\$409.71	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	139.18	5	\$25.10	15%	50%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	2,291.00	20	\$1,761.06	15%	50%	\$0.07	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,194.03	15	\$413.00	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	2,528.64	10	\$916.54	15%	50%	\$0.05	1	1	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,241.30	15%	30%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	1,994.17	15	\$971.23	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,139.14	3	\$103.70	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	3,266.10	15	\$1,553.97	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$597.68	15%	50%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	3,927.64	10	\$511.32	8%	38%	\$0.02	1	1	6th Plan
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	1,322.49	15	\$149.12	8%	38%	\$0.01	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	677.28	3	\$42.44	8%	38%	\$0.02	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	1,999.99	10	\$381.62	8%	38%	\$0.03	1	1	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	275.33	8	\$479.94	10%	50%	\$0.28	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	195.35	8	\$170.04	5%	25%	\$0.14	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$939.85	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,752.92	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$10.46	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	4,952.82	17	\$433.02	5%	6%	\$0.01	0	0	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	768.41	10	\$203.51	15%	36%	\$0.04	1	1	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	4,886.82	17	\$1,202.53	25%	44%	\$0.03	4	4	RSMeans 2013
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,688.88	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,783.18	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	809.61	10	\$155.40	8%	38%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	817.80	15	\$189.46	8%	38%	\$0.03	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	426.05	3	\$53.79	8%	38%	\$0.05	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	1,324.34	12	\$525.96	8%	38%	\$0.05	0	0	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	1,885.14	3	\$1,536.93	5%	39%	\$0.07	3	3	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,719.98	3	\$1,192.37	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$1,034.88	15%	25%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	574.61	10	\$5,501.65	15%	24%	\$0.04	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$420.47	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	New	2,144.82	3	\$1,536.93	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	4,796.28	10	\$146.13	15%	75%	\$0.00	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	5,344.95	15	\$1,088.08	15%	50%	\$0.02	1	1	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,192.51	15	\$409.71	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	139.65	5	\$25.10	15%	50%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	2,306.64	20	\$1,761.06	15%	50%	\$0.07	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,194.52	15	\$413.00	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	2,538.99	10	\$916.54	15%	50%	\$0.05	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,241.30	15%	30%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	2,051.73	15	\$971.23	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	1,141.74	3	\$103.70	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	3,237.56	15	\$1,553.97	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$597.68	15%	50%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	3,855.78	10	\$511.32	8%	38%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	New	1,322.75	15	\$149.12	8%	38%	\$0.01	0	0	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	656.95	3	\$42.44	8%	38%	\$0.02	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	1,956.29	10	\$381.62	8%	38%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	312.30	8	\$479.94	10%	50%	\$0.25	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	221.59	8	\$170.04	5%	25%	\$0.13	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$939.85	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,752.92	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$10.46	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	5,607.18	17	\$433.02	5%	6%	\$0.01	0	0	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	870.93	10	\$203.51	15%	36%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	5,596.72	17	\$721.40	25%	44%	\$0.01	2	2	RSMeans 2013
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,688.88	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,783.18	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	803.29	10	\$155.40	8%	38%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	814.60	15	\$189.46	8%	38%	\$0.03	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	421.38	3	\$53.79	8%	38%	\$0.05	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	1,307.09	12	\$525.96	8%	38%	\$0.05	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	1,946.42	3	\$953.30	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$1,034.88	15%	25%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	173.61	32	\$15,956.57	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$420.47	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$48.41	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	5,822.51	1	\$37.65	15%	75%	\$0.01	4	4	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	1,779.47	10	\$177.81	15%	75%	\$0.01	1	1	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	995.20	20	\$212.18	15%	75%	\$0.02	1	1	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$13,731.70	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	539.93	10	\$135.97	15%	75%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	10,585.33	10	\$6,555.06	15%	75%	\$0.07	6	7	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	650.21	10	\$727.68	15%	75%	\$0.07	0	1	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	5,653.84	10	\$6,662.04	15%	75%	\$0.08	3	5	6th Plan
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$63.95	0%	0%	\$10.00	0	0	MT - IRP 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$52.30	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$307.21	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$10,528.14	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,767.26	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$47.22	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,465.65	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$20,789.41	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	730.63	5	\$197.83	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	7,231.50	10	\$3,954.85	15%	75%	\$0.08	5	5	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,383.54	5	\$2,014.18	15%	75%	\$0.33	4	4	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	2,233.76	15	\$1,098.24	15%	50%	\$0.06	1	1	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	4,406.10	18	\$2,635.47	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	1,546.70	3	\$146.43	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	4,594.44	15	\$2,196.18	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	622.66	3	\$1,536.93	5%	39%	\$0.07	6	1	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	2,132.04	3	\$1,192.37	0%	5%	\$0.01	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	731.84	10	\$5,501.65	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$48.41	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	5,822.51	1	\$37.65	15%	75%	\$0.01	1	1	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	1,857.39	10	\$177.81	15%	75%	\$0.01	0	0	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	1,053.06	20	\$212.18	15%	75%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	New	748.63	3	\$1,536.93	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$13,731.70	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	565.77	10	\$135.97	15%	75%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	11,108.87	10	\$6,555.06	15%	75%	\$0.07	2	2	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	698.87	10	\$727.68	15%	75%	\$0.07	0	0	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	6,069.80	10	\$6,662.04	15%	75%	\$0.08	1	1	6th Plan
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$63.95	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$52.30	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$307.21	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$10,528.14	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,767.26	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$47.22	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,465.65	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$20,789.41	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$197.83	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$3,954.85	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	1,199.58	5	\$2,014.18	15%	75%	\$0.37	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	2,241.30	15	\$1,098.24	15%	50%	\$0.06	0	0	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	4,424.59	18	\$2,635.47	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	1,547.34	3	\$146.43	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	4,601.89	15	\$2,196.18	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	New	1,877.23	3	\$953.30	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	164.10	32	\$15,956.57	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$50,638.76	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	1,064.16	3	\$1,192.37	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	367.23	10	\$5,501.65	15%	24%	\$0.04	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	389.79	15	\$83.38	15%	35%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	12,296.01	20	\$13,597.58	100%	at stock turnover	\$0.11	1	1	BEST Simulation
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$32,678.17	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	377.51	3	\$953.30	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	35.60	32	\$15,956.57	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	138.33	15	\$38.25	15%	35%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	6,842.57	20	\$8,417.34	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	30,725.31	23	\$71,409.36	2%	at stock turnover	\$0.13	23	22	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	17,487.29	23	\$9,437.99	6%	at stock turnover	\$0.06	29	29	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,277.40	10	\$2,311.53	15%	45%	\$0.04	7	7	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,080.14	15	\$1,334.90	15%	60%	\$0.07	2	3	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	454.28	15	\$392.14	15%	75%	\$0.09	1	1	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	15,011.80	15	\$112,935.31	15%	50%	\$0.75	35	40	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,264.87	12	\$24,428.79	15%	50%	\$0.22	31	38	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	Existing	3,926.61	15	\$37,938.69	20%	50%	\$0.18	8	9	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	29,674.47	23	\$64,324.21	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	12,287.50	18	\$16,090.55	15%	75%	\$0.10	8	9	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	855.79	18	\$1,458.63	15%	25%	\$0.07	1	1	BEST Simulation
Food Mfg	Cooling	HVAC - Economizer	per Facility	Existing	5,334.29	10	\$11,348.22	18%	30%	\$0.10	7	3	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	9,034.68	45	\$159,693.23	15%	25%	\$0.16	6	7	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,450.00	20	\$2,913.96	15%	25%	\$0.07	2	2	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-131.83	45	\$21,185.28	45%	50%	\$0.06	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	24,077.05	23	\$73,267.60	4%	at stock turnover	\$0.32	7	7	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,607.32	3	\$2,911.80	0%	18%	\$0.03	5	5	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,220.65	10	\$3,782.93	15%	24%	\$0.05	1	1	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	27,447.60	23	\$14,280.09	3%	at stock turnover	\$0.05	23	23	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,702.87	10	\$2,233.44	15%	45%	\$0.04	3	4	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	11,079.57	4	\$1,452.17	15%	50%	\$0.03	5	6	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,857.44	15	\$1,903.02	15%	60%	\$0.07	2	2	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	425.87	15	\$382.81	15%	75%	\$0.09	0	0	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	22,522.92	23	\$54,163.47	2%	at stock turnover	\$0.13	10	9	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	10,517.22	23	\$2,107.53	6%	at stock turnover	\$0.02	11	11	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,579.96	10	\$2,033.50	15%	45%	\$0.04	2	2	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,373.47	15	\$981.80	15%	60%	\$0.07	1	1	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$880.60	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,953.84	15	\$112,935.31	15%	50%	\$1.34	6	7	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	7,042.72	12	\$15,764.29	15%	50%	\$0.25	6	6	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	New	2,090.60	15	\$31,086.64	20%	50%	\$0.16	1	2	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	21,821.66	23	\$48,789.43	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	7,842.18	18	\$11,639.03	15%	75%	\$0.11	2	2	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	681.75	18	\$293.10	15%	25%	\$0.31	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	HVAC - Economizer	per Facility	New	2,714.96	10	\$6,574.74	18%	30%	\$0.10	2	1	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-116.72	45	\$121,219.58	15%	25%	\$0.14	0	0	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,156.10	20	\$570.56	15%	25%	\$0.28	0	0	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-34.27	45	\$2,806.01	45%	50%	\$0.06	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	New	13,774.33	23	\$43,313.59	4%	at stock turnover	\$0.33	3	3	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	New	1,906.10	3	\$2,497.27	0%	18%	\$0.03	1	1	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$160.76	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	New	163.21	32	\$11,611.75	15%	52%	\$0.35	0	0	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	16,611.89	23	\$10,841.89	3%	at stock turnover	\$0.07	9	9	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,893.67	10	\$1,349.54	15%	45%	\$0.04	0	0	1 DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,626.27	4	\$882.61	15%	50%	\$0.04	1	1	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,574.28	15	\$1,250.64	15%	60%	\$0.07	0	0	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$1,483.89	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	143.98	15	\$37,938.69	20%	50%	\$0.18	4	7	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	474.53	5	\$89.14	15%	25%	\$0.03	5	9	Illinois TRM
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	186.32	10	\$208.85	33%	60%	\$0.11	5	10	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,506.82	10	\$1,426.48	15%	30%	\$0.06	36	71	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	190	193	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	96	97	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	135	268	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.71	15	\$6.31	100%	at stock turnover	\$0.04	15	42	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$2,911.80	0%	18%	\$0.03	2	5	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.03	10	\$3,782.93	15%	24%	\$0.05	0	0	1 6th Plan
Food Mfg	Exterior Lighting	Energy Management System	per Facility	New	125.93	15	\$31,086.64	20%	50%	\$0.16	1	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	413.55	5	\$88.71	15%	25%	\$0.03	1	2	Illinois TRM
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	169.46	10	\$127.89	44%	60%	\$0.06	1	1	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,185.71	10	\$1,419.73	15%	30%	\$0.06	11	16	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	85	98	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	43	49	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	62	120	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	3	9	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$2,497.27	0%	18%	\$0.03	1	1	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.23	32	\$11,611.75	15%	52%	\$0.35	0	0	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,593.21	23	\$44,050.12	2%	at stock turnover	\$0.13	5	5	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$24,428.79	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	Existing	19,521.37	15	\$37,938.69	20%	50%	\$0.18	57	57	BEST Simulation
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,051.13	23	\$33,825.40	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	3,435.43	18	\$16,090.55	15%	75%	\$0.10	2	2	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,406.03	18	\$1,458.63	15%	25%	\$0.07	1	1	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	78,787.29	45	\$159,693.23	15%	25%	\$0.16	77	77	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,313.34	20	\$2,913.96	15%	25%	\$0.07	1	1	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	29,618.18	45	\$21,185.28	45%	50%	\$0.06	14	14	BEST Simulation
Food Mfg	Heating	Strategic Energy Management	per Facility	Existing	17,231.98	3	\$2,911.80	0%	18%	\$0.03	30	30	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$60.00	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	5,927.35	10	\$3,782.93	15%	24%	\$0.05	5	5	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	10,484.86	23	\$38,794.63	2%	at stock turnover	\$0.13	4	4	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$15,764.29	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	New	18,759.81	15	\$31,086.64	20%	50%	\$0.16	17	17	BEST Simulation
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,379.16	23	\$25,656.29	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,233.79	18	\$11,639.03	15%	75%	\$0.11	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-739.88	18	\$293.10	15%	25%	\$0.31	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	75,977.25	45	\$121,219.58	15%	25%	\$0.14	24	24	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,219.09	20	\$570.56	15%	25%	\$0.28	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,451.63	45	\$2,806.01	45%	50%	\$0.06	1	1	BEST Simulation
Food Mfg	Heating	Strategic Energy Management	per Facility	New	16,551.69	3	\$2,497.27	0%	18%	\$0.03	9	9	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$160.76	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,524.57	32	\$11,611.75	15%	52%	\$0.35	2	2	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	Existing	779.18	15	\$37,938.69	20%	50%	\$0.18	22	35	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	1,460	1,481	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,850.63	5	\$604.72	5%	40%	\$0.03	31	64	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,683.99	5	\$806.25	15%	50%	\$0.03	39	83	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,862.39	12	\$5,421.12	3%	25%	\$0.10	102	200	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	840.73	16	\$99.76	1%	3%	\$0.01	2	3	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,601.14	10	\$1,375.23	7%	60%	\$0.03	219	394	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$17,655.11	15%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,674.54	8	\$468.51	7%	15%	\$0.03	14	27	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.72	5	\$25.26	10%	25%	\$0.01	1	3	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	742	790	AEO 2013
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	152	301	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	17	47	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	730.13	3	\$2,911.80	0%	18%	\$0.03	13	28	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	243.25	10	\$3,782.93	15%	24%	\$0.05	2	3	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	New	732.57	15	\$31,086.64	20%	50%	\$0.16	7	11	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	655	748	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,373.26	5	\$604.15	5%	40%	\$0.04	9	14	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,064.36	5	\$805.53	15%	50%	\$0.04	12	18	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,563.70	12	\$5,096.16	4%	25%	\$0.09	31	46	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	760.98	16	\$99.47	1%	3%	\$0.01	1	1	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,068.45	10	\$1,413.84	22%	60%	\$0.03	38	57	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$17,655.11	18%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,567.14	8	\$456.16	7%	15%	\$0.03	4	6	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.43	5	\$25.12	10%	25%	\$0.01	0	1	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	335	377	AEO 2013
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	70	135	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	3	10	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	682.29	3	\$2,497.27	0%	18%	\$0.03	4	6	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.53	32	\$11,611.75	15%	52%	\$0.35	1	1	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$17.94	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	3,047.33	3	\$2,800.42	10%	37%	\$0.07	81	81	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,659.43	3	\$2,911.80	0%	18%	\$0.03	47	47	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	914.77	10	\$3,782.93	15%	24%	\$0.05	8	8	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$17.94	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	New	3,053.79	3	\$2,800.42	10%	37%	\$0.07	24	24	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,659.43	3	\$2,497.27	0%	18%	\$0.03	14	14	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	248.32	32	\$11,611.75	15%	52%	\$0.35	3	3	6th Plan
Food Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	9,498.42	10	\$289.08	15%	75%	\$0.00	288	288	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	10,604.22	15	\$2,154.64	15%	50%	\$0.02	182	192	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,329.85	15	\$811.70	15%	38%	\$0.04	25	28	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	274.38	5	\$49.81	15%	50%	\$0.04	5	5	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	4,516.56	20	\$3,487.53	15%	50%	\$0.07	74	85	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,362.01	15	\$817.73	15%	38%	\$0.04	26	28	MI - TRM
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	4,984.98	10	\$1,815.18	15%	50%	\$0.05	84	92	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,076.53	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	4,024.28	15	\$1,923.40	8%	38%	\$0.05	58	64	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,259.85	3	\$205.12	8%	38%	\$0.03	33	35	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	6,345.93	15	\$3,077.44	8%	38%	\$0.05	90	101	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$287.08	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	25,013.02	10	\$3,250.41	8%	38%	\$0.02	375	379	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	Existing	8,422.22	15	\$948.07	8%	38%	\$0.01	127	128	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	Existing	4,268.11	3	\$269.71	8%	38%	\$0.02	62	65	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	12,736.84	10	\$2,426.93	8%	38%	\$0.03	183	193	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	964.90	8	\$1,325.14	10%	50%	\$0.22	74	79	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	684.61	8	\$469.80	5%	25%	\$0.11	26	28	Developed from RTF
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$112.82	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,571.47	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$9.76	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	17,494.86	17	\$1,195.24	5%	6%	\$0.01	35	35	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,705.17	10	\$561.52	15%	36%	\$0.03	111	117	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	17,345.58	17	\$3,320.02	25%	44%	\$0.02	659	665	RSMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,445.91	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,665.75	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	11,470.00	10	\$2,196.84	8%	38%	\$0.03	170	174	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	Existing	11,585.94	15	\$2,678.41	8%	38%	\$0.03	174	175	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	5,997.95	3	\$761.90	8%	38%	\$0.05	88	91	Scaled from Optimization
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	18,644.27	12	\$7,439.98	8%	38%	\$0.05	272	282	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	Existing	6,596.26	3	\$2,800.42	10%	37%	\$0.07	345	360	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	Existing	5,845.11	3	\$2,911.80	0%	18%	\$0.03	206	220	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$966.58	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	2,007.81	10	\$3,782.93	15%	24%	\$0.05	37	38	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$974.19	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Commissioning	per Facility	New	5,822.09	3	\$2,800.42	10%	37%	\$0.07	125	125	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	9,498.42	10	\$289.08	15%	75%	\$0.00	91	91	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	10,599.10	15	\$2,154.64	15%	50%	\$0.02	59	59	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,339.65	15	\$811.70	15%	38%	\$0.04	8	8	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	275.61	5	\$49.81	15%	50%	\$0.04	2	2	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	4,552.27	20	\$3,487.53	15%	50%	\$0.07	25	25	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,371.21	15	\$817.73	15%	38%	\$0.04	8	8	MI - TRM
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	5,010.77	10	\$1,815.18	15%	50%	\$0.05	28	28	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,076.53	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	New	3,959.95	15	\$1,923.40	8%	38%	\$0.05	19	19	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	2,253.25	3	\$205.12	8%	38%	\$0.03	11	11	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	6,478.66	15	\$3,077.44	8%	38%	\$0.05	31	31	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$287.08	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	24,545.25	10	\$3,250.41	8%	38%	\$0.02	118	118	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	New	8,420.42	15	\$948.07	8%	38%	\$0.01	40	40	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	New	4,182.00	3	\$269.71	8%	38%	\$0.02	20	20	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	12,453.39	10	\$2,426.93	8%	38%	\$0.03	60	60	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	849.60	8	\$1,325.14	10%	50%	\$0.25	27	27	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	602.81	8	\$469.80	5%	25%	\$0.13	10	10	Developed from RTF
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$112.82	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,571.47	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$9.76	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	15,536.05	17	\$1,195.24	5%	6%	\$0.01	12	12	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,371.65	10	\$561.52	15%	36%	\$0.03	40	40	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	15,485.07	17	\$1,992.01	25%	44%	\$0.01	235	235	RSMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,445.91	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,665.75	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	11,375.68	10	\$2,196.84	8%	38%	\$0.03	55	55	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	New	11,535.83	15	\$2,678.41	8%	38%	\$0.03	55	55	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	New	5,938.71	3	\$761.90	8%	38%	\$0.05	28	28	Scaled from Optimization
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	18,421.33	12	\$7,439.98	8%	38%	\$0.05	88	88	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	New	5,167.00	3	\$2,497.27	0%	18%	\$0.03	74	74	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$966.58	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	New	472.29	32	\$11,611.75	15%	52%	\$0.35	14	14	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$974.19	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$682.66	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$7.75	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$36.46	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$43.64	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$1,648.96	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$27.85	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,346.38	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$149.42	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,368.34	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$71.05	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$6.32	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$36.89	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$1,264.28	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$4,671.57	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$79.95	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,856.57	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$35,096.36	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	Existing	115.31	5	\$31.29	15%	75%	\$0.07	3	3	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,143.13	10	\$626.97	15%	75%	\$0.08	34	35	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	Existing	2,403.53	5	\$3,400.55	15%	75%	\$0.33	357	364	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	8,966.34	15	\$4,428.13	15%	50%	\$0.06	157	160	Developed from RTF
Food Mfg	Process	Refrigeration - System Controls	per Facility	Existing	17,686.14	18	\$10,627.52	15%	50%	\$0.06	307	317	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	6,208.42	3	\$590.37	15%	50%	\$0.04	110	110	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	18,441.99	15	\$8,856.26	15%	50%	\$0.06	325	327	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Retrocommissioning	per Facility	Existing	1,407.12	3	\$2,800.42	10%	37%	\$0.07	474	96	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	Existing	3,638.37	3	\$2,911.80	0%	18%	\$0.03	165	165	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	Existing	1,247.21	10	\$3,782.93	15%	24%	\$0.05	29	30	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$682.66	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$7.75	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$36.46	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$43.64	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	New	2,171.55	3	\$2,800.42	10%	37%	\$0.07	150	78	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$1,648.96	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$27.85	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,346.38	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$149.42	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,368.34	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$71.05	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$6.32	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$36.89	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$1,264.28	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$4,671.57	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$79.95	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,856.57	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$35,096.36	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$31.29	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$626.97	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	New	2,920.06	5	\$3,400.55	15%	75%	\$0.27	112	112	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	9,245.92	15	\$4,428.13	15%	50%	\$0.06	52	52	Developed from RTF
Food Mfg	Process	Refrigeration - System Controls	per Facility	New	17,779.49	18	\$10,627.52	15%	50%	\$0.06	99	99	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	New	6,217.68	3	\$590.37	15%	50%	\$0.04	35	35	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	18,252.21	15	\$8,856.26	15%	50%	\$0.06	102	102	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	New	4,422.17	3	\$2,497.27	0%	18%	\$0.03	51	51	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	New	394.65	32	\$11,611.75	15%	52%	\$0.35	9	9	6th Plan
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$24,428.79	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	512.68	3	\$2,911.80	0%	18%	\$0.03	4	5	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	176.36	10	\$3,782.93	15%	24%	\$0.05	1	1	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	188.37	15	\$40.19	15%	35%	\$0.02	2	2	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,931.74	20	\$6,559.64	100%	at stock turnover	\$0.11	34	34	BEST Simulation
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$15,764.29	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	New	182.12	3	\$2,497.27	0%	18%	\$0.03	1	1	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	17.11	32	\$11,611.75	15%	52%	\$0.35	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	66.50	15	\$18.52	15%	35%	\$0.03	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,300.94	20	\$4,060.62	100%	at stock turnover	\$0.13	5	5	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	42,681.79	23	\$99,197.68	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	24,292.31	23	\$13,110.70	6%	at stock turnover	\$0.06	2	2	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,550.96	10	\$3,210.94	15%	45%	\$0.04	1	1	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,902.78	15	\$1,854.33	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	633.94	15	\$544.89	15%	75%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	20,948.12	15	\$441,982.27	15%	50%	\$2.12	3	3	BEST Simulation
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	Existing	18,510.54	12	\$33,935.12	15%	50%	\$0.22	3	3	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	Existing	5,479.41	15	\$51,991.34	20%	50%	\$0.18	1	1	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	41,222.03	23	\$89,355.40	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	Existing	17,146.79	18	\$22,351.90	15%	75%	\$0.10	1	1	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,194.23	18	\$2,026.22	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	Existing	7,443.83	10	\$15,764.30	18%	30%	\$0.10	1	0	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	12,607.53	45	\$221,836.56	15%	25%	\$0.16	1	1	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,418.90	20	\$4,047.95	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-183.97	45	\$29,429.35	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	Existing	33,446.43	23	\$101,779.03	4%	at stock turnover	\$0.32	1	1	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	Existing	5,011.08	3	\$829.14	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$469.06	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	Existing	1,703.38	10	\$3,832.80	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	38,128.59	23	\$19,837.06	3%	at stock turnover	\$0.05	2	2	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,749.03	10	\$3,102.53	15%	45%	\$0.04	0	0	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	15,461.19	4	\$2,017.23	15%	50%	\$0.03	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,987.42	15	\$2,643.58	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	594.27	15	\$531.97	15%	75%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	31,287.51	23	\$75,240.70	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,684.99	23	\$78,183.54	6%	at stock turnover	\$4.83	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	10,301.25	10	\$2,825.02	15%	45%	\$0.04	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,149.98	15	\$1,363.92	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$6,892.63	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	11,598.53	15	\$441,982.27	15%	50%	\$3.77	1	1	BEST Simulation
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	New	10,270.74	12	\$21,898.57	15%	50%	\$0.25	0	1	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	New	3,048.88	15	\$42,475.91	20%	50%	\$0.16	0	0	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	30,313.37	23	\$67,775.41	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	New	10,931.66	18	\$16,168.19	15%	75%	\$0.11	0	0	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	994.16	18	\$407.27	15%	25%	\$0.31	0	0	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	New	3,999.78	10	\$9,133.44	18%	30%	\$0.10	0	0	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	New	-170.23	45	\$168,390.86	15%	25%	\$0.14	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	New	1,685.88	20	\$792.62	15%	25%	\$0.28	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-49.98	45	\$3,897.96	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	New	19,134.49	23	\$60,168.70	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	New	2,771.03	3	\$669.04	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,258.31	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	New	237.99	32	\$11,198.42	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	23,076.27	23	\$15,060.92	3%	at stock turnover	\$0.07	1	1	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,427.59	10	\$1,874.55	15%	45%	\$0.04	0	0	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,842.79	4	\$1,226.29	15%	50%	\$0.04	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,194.45	15	\$1,737.48	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$11,614.11	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$51,991.34	20%	50%	\$0.18	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$89.32	15%	25%	\$0.03	0	1	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.97	33%	60%	\$0.11	0	1	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.27	15%	30%	\$0.06	2	4	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	11	11	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	6	6	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	8	16	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	230.07	15	-\$63.50	100%	at stock turnover	\$0.04	1	2	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$829.14	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$3,832.80	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$42,475.91	20%	50%	\$0.16	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.76	15%	25%	\$0.03	0	0	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$128.08	44%	60%	\$0.06	0	0	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,419.53	15%	30%	\$0.06	1	1	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	5	6	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	3	3	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	4	7	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	52.28	15	-\$0.34	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$669.04	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$11,198.42	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	9,158.90	23	\$61,191.84	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$33,935.12	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	Existing	27,241.99	15	\$51,991.34	20%	50%	\$0.18	5	5	BEST Simulation
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	4,238.45	23	\$46,988.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	Existing	4,794.11	18	\$22,351.90	15%	75%	\$0.10	0	0	AEG research & analysis

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Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,962.11	18	\$2,026.22	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	Existing	109,947.55	45	\$221,836.56	15%	25%	\$0.16	6	6	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,832.77	20	\$4,047.95	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	41,332.14	45	\$29,429.35	45%	50%	\$0.06	1	1	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	Existing	23,937.65	3	\$829.14	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$469.06	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	Existing	8,271.62	10	\$3,832.80	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	14,564.95	23	\$53,891.21	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$21,898.57	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	New	26,151.05	15	\$42,475.91	20%	50%	\$0.16	1	1	BEST Simulation
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	10,250.70	23	\$35,640.21	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	New	3,113.89	18	\$16,168.19	15%	75%	\$0.11	0	0	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-1,031.38	18	\$407.27	15%	25%	\$0.31	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	New	105,912.01	45	\$168,390.86	15%	25%	\$0.14	2	2	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	New	-1,699.40	20	\$792.62	15%	25%	\$0.28	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	New	6,205.56	45	\$3,897.96	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	New	22,992.64	3	\$669.04	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,258.31	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	New	2,125.23	32	\$11,198.42	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$51,991.34	20%	50%	\$0.18	1	2	BEST Simulation
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	86	87	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,745.93	5	\$604.44	5%	40%	\$0.03	2	4	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.78	5	\$806.11	15%	50%	\$0.03	2	5	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.42	3%	25%	\$0.10	6	12	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.99	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.16	7%	60%	\$0.03	13	23	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$69,094.84	15%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$468.50	7%	15%	\$0.03	1	2	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.19	5	\$25.28	10%	25%	\$0.01	0	0	AEG research & analysis
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	44	46	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	9	18	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	1	3	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.96	3	\$829.14	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$3,832.80	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$42,475.91	20%	50%	\$0.16	0	1	BEST Simulation
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	38	44	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,381.35	5	\$603.88	5%	40%	\$0.04	1	1	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,074.77	5	\$805.54	15%	50%	\$0.04	1	1	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,096.17	4%	25%	\$0.09	2	3	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	759.99	16	\$99.43	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.92	22%	60%	\$0.03	2	3	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$69,094.84	18%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.14	7%	15%	\$0.03	0	0	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.14	5	\$25.28	10%	25%	\$0.01	0	0	AEG research & analysis
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	20	22	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	4	8	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	New	732.80	3	\$669.04	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$11,198.42	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$140.44	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	Existing	2,231.07	3	\$1,154.95	5%	39%	\$0.07	4	4	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,938.20	3	\$829.14	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	669.74	10	\$3,832.80	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$140.44	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	New	2,233.39	3	\$1,154.95	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	New	1,938.20	3	\$669.04	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	New	181.22	32	\$11,198.42	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	9,573.12	10	\$291.55	15%	75%	\$0.00	17	17	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	10,668.98	15	\$2,171.71	15%	50%	\$0.02	11	11	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,373.51	15	\$817.90	15%	38%	\$0.04	2	2	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	277.79	5	\$50.00	15%	50%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	4,539.45	20	\$3,514.85	15%	50%	\$0.07	4	5	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,376.77	15	\$824.08	15%	38%	\$0.04	2	2	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	5,047.03	10	\$1,829.61	15%	50%	\$0.05	5	5	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,106.55	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	Existing	3,980.26	15	\$1,938.59	8%	38%	\$0.05	3	4	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,273.66	3	\$206.72	8%	38%	\$0.03	2	2	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	6,518.96	15	\$3,101.97	8%	38%	\$0.05	5	6	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$561.75	15%	50%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	16,654.97	10	\$2,168.34	8%	38%	\$0.02	15	15	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	Existing	5,607.95	15	\$632.53	8%	38%	\$0.01	5	5	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	Existing	2,871.99	3	\$179.76	8%	38%	\$0.02	2	3	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	8,480.89	10	\$1,618.95	8%	38%	\$0.03	7	8	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	461.25	8	\$676.34	10%	50%	\$0.23	2	2	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	327.26	8	\$239.87	5%	25%	\$0.12	1	1	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$883.07	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,873.99	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$7.30	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	8,453.47	17	\$610.06	5%	6%	\$0.01	1	1	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,295.55	10	\$286.49	15%	36%	\$0.03	3	3	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	Existing	8,329.23	17	\$1,694.79	25%	44%	\$0.02	18	19	RSMeans 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,511.57	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,213.93	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	2,360.28	10	\$452.77	8%	38%	\$0.03	2	2	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	Existing	2,384.13	15	\$552.20	8%	38%	\$0.03	2	2	Scaled from Optimization

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Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	Existing	1,242.06	3	\$157.29	8%	38%	\$0.05	1	1	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	3,860.87	12	\$1,533.57	8%	38%	\$0.05	3	3	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	Existing	3,170.74	3	\$1,154.95	5%	39%	\$0.07	12	13	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	Existing	2,928.91	3	\$829.14	0%	5%	\$0.01	2	2	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$704.43	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	Existing	966.18	10	\$3,832.80	15%	24%	\$0.04	1	1	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$434.23	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	New	2,940.83	3	\$1,154.95	5%	39%	\$0.07	5	5	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	New	9,573.12	10	\$291.55	15%	75%	\$0.00	5	5	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	10,668.23	15	\$2,171.71	15%	50%	\$0.02	3	3	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,380.20	15	\$817.90	15%	38%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	278.74	5	\$50.00	15%	50%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	New	4,603.93	20	\$3,514.85	15%	50%	\$0.07	1	1	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,384.19	15	\$824.08	15%	38%	\$0.04	1	1	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	5,067.70	10	\$1,829.61	15%	50%	\$0.05	2	2	VT - TRM
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,106.55	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	New	4,095.15	15	\$1,938.59	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	New	2,278.86	3	\$206.72	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	6,461.99	15	\$3,101.97	8%	38%	\$0.05	2	2	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$561.75	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	16,350.27	10	\$2,168.34	8%	38%	\$0.02	5	5	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	New	5,609.06	15	\$632.53	8%	38%	\$0.01	2	2	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	New	2,785.75	3	\$179.76	8%	38%	\$0.02	1	1	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	New	8,295.58	10	\$1,618.95	8%	38%	\$0.03	2	2	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	428.22	8	\$676.34	10%	50%	\$0.25	1	1	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	303.83	8	\$239.87	5%	25%	\$0.13	0	0	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$883.07	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,873.99	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$7.30	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	7,876.34	17	\$610.06	5%	6%	\$0.01	0	0	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,202.07	10	\$286.49	15%	36%	\$0.03	1	1	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	New	7,844.29	17	\$1,016.76	25%	44%	\$0.01	7	7	RSMeans 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,511.57	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,213.93	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,341.84	10	\$452.77	8%	38%	\$0.03	1	1	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	New	2,374.80	15	\$552.20	8%	38%	\$0.03	1	1	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	New	1,228.47	3	\$157.29	8%	38%	\$0.05	0	0	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,810.58	12	\$1,533.57	8%	38%	\$0.05	1	1	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	New	2,734.12	3	\$669.04	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$704.43	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	New	238.04	32	\$11,198.42	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$434.23	0%	0%	\$10.00	0	0	6th Plan

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Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$141.00	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$14.61	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$69.09	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$82.58	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$12,906.13	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$52.80	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,550.89	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$283.12	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,592.46	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$32.58	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$48.87	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	Existing	0.00	10	\$288.74	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$9,895.17	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$935.87	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$16.29	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,773.43	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$7,032.51	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	Existing	190.00	5	\$51.68	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,880.57	10	\$1,028.56	15%	75%	\$0.08	3	3	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	Existing	491.92	5	\$681.40	15%	75%	\$0.33	4	4	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	495.94	15	\$237.06	15%	50%	\$0.06	1	1	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	Existing	951.22	18	\$569.05	15%	50%	\$0.06	1	1	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	Existing	333.92	3	\$31.46	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	978.19	15	\$474.11	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	Existing	198.58	3	\$1,154.95	5%	39%	\$0.07	5	1	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	Existing	729.07	3	\$829.14	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	Existing	251.70	10	\$3,832.80	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$141.00	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$14.61	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$69.09	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$82.58	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	New	251.56	3	\$1,154.95	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$12,906.13	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$52.80	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,550.89	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$283.12	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,592.46	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$32.58	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$48.87	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	New	0.00	10	\$288.74	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	New	0.00	10	\$9,895.17	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$935.87	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$16.29	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,773.43	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$7,032.51	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$51.68	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$1,028.56	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	New	476.17	5	\$681.40	15%	75%	\$0.34	1	1	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	483.87	15	\$237.06	15%	50%	\$0.06	0	0	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	New	955.22	18	\$569.05	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	New	334.05	3	\$31.46	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	993.50	15	\$474.11	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	New	705.01	3	\$669.04	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	New	65.14	32	\$11,198.42	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$33,935.12	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	Existing	713.14	3	\$829.14	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	Existing	246.10	10	\$3,832.80	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	261.21	15	\$55.61	15%	35%	\$0.02	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	8,240.03	20	\$9,112.26	100%	at stock turnover	\$0.11	3	3	BEST Simulation
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$21,898.57	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	New	252.99	3	\$669.04	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	New	23.86	32	\$11,198.42	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	92.70	15	\$25.84	15%	35%	\$0.03	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,585.47	20	\$5,640.78	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	17,923.54	23	\$41,656.49	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	10,201.17	23	\$5,505.63	6%	at stock turnover	\$0.06	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	4,859.12	10	\$1,348.33	15%	45%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,210.89	15	\$778.59	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	264.45	15	\$228.72	15%	75%	\$0.09	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	8,738.76	15	\$217,079.16	15%	50%	\$2.48	1	1	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	7,721.80	12	\$14,250.58	15%	50%	\$0.22	1	1	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	Existing	2,285.77	15	\$22,892.64	20%	50%	\$0.17	0	0	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	17,310.54	23	\$37,523.38	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	7,152.82	18	\$9,386.44	15%	75%	\$0.10	0	0	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	498.17	18	\$850.88	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	Existing	3,105.21	10	\$6,619.98	18%	30%	\$0.10	0	0	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	5,259.30	45	\$93,156.70	15%	25%	\$0.16	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	1,426.20	20	\$1,699.83	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-76.74	45	\$12,358.45	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	Existing	14,045.30	23	\$42,740.49	4%	at stock turnover	\$0.32	0	0	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	Existing	2,070.05	3	\$3,018.08	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$307.08	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	Existing	710.57	10	\$2,965.11	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	16,011.50	23	\$8,330.26	3%	at stock turnover	\$0.05	1	1	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	4,521.74	10	\$1,302.81	15%	45%	\$0.04	0	0	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	6,504.00	4	\$847.02	15%	50%	\$0.03	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,663.39	15	\$1,110.23	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	247.91	15	\$223.20	15%	75%	\$0.09	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	13,138.69	23	\$31,596.14	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	707.58	23	\$268,322.85	6%	at stock turnover	\$39.47	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,303.83	10	\$1,186.38	15%	45%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	898.26	15	\$572.77	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$4,513.75	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	4,846.04	15	\$217,079.16	15%	50%	\$4.41	0	0	BEST Simulation
Lumber Wood Products	Cooling	De-stratification Fans (HVLS)	per Facility	New	4,291.22	12	\$9,196.07	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	New	1,273.85	15	\$18,892.34	20%	50%	\$0.16	0	0	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	12,729.62	23	\$28,461.21	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	New	4,567.40	18	\$6,789.66	15%	75%	\$0.11	0	0	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	415.37	18	\$171.06	15%	25%	\$0.31	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	New	1,671.13	10	\$3,835.30	18%	30%	\$0.10	0	0	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	-71.12	45	\$70,713.23	15%	25%	\$0.14	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	New	704.38	20	\$332.74	15%	25%	\$0.28	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-20.88	45	\$1,636.92	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	New	8,035.23	23	\$25,266.89	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	New	1,157.89	3	\$2,696.38	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$824.12	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	New	99.44	32	\$9,402.99	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	9,690.51	23	\$6,324.59	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,267.74	10	\$787.15	15%	45%	\$0.04	0	0	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	3,297.83	4	\$514.83	15%	50%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	916.89	15	\$729.48	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$7,605.77	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	Existing	143.69	15	\$22,892.64	20%	50%	\$0.17	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	477.47	5	\$89.12	15%	25%	\$0.03	0	0	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	185.94	10	\$208.86	33%	60%	\$0.11	0	0	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,501.64	10	\$1,426.41	15%	30%	\$0.06	2	3	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	9	9	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	4	4	AEO 2013
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	6	12	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	453.84	15	-\$10.86	100%	at stock turnover	\$0.04	1	2	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	136.70	3	\$3,018.08	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	46.93	10	\$2,965.11	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	New	125.73	15	\$18,892.34	20%	50%	\$0.16	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	415.50	5	\$88.84	15%	25%	\$0.03	0	0	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	169.19	10	\$128.02	44%	60%	\$0.06	0	0	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,182.27	10	\$1,419.79	15%	30%	\$0.06	0	1	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	4	4	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	2	2	AEO 2013
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	3	5	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	New	118.95	3	\$2,696.38	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.22	32	\$9,402.99	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	3,846.13	23	\$25,696.54	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$14,250.58	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	Existing	11,363.70	15	\$22,892.64	20%	50%	\$0.17	1	2	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,779.87	23	\$19,731.97	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	Existing	1,999.82	18	\$9,386.44	15%	75%	\$0.10	0	0	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	818.47	18	\$850.88	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	45,863.31	45	\$93,156.70	15%	25%	\$0.16	2	2	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	764.52	20	\$1,699.83	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	17,241.20	45	\$12,358.45	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	Existing	10,052.24	3	\$3,018.08	0%	24%	\$0.04	1	1	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$307.08	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	Existing	3,450.40	10	\$2,965.11	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,116.32	23	\$22,630.76	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$9,196.07	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	New	10,925.85	15	\$18,892.34	20%	50%	\$0.16	0	0	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,304.62	23	\$14,966.54	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	New	1,300.98	18	\$6,789.66	15%	75%	\$0.11	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-430.91	18	\$171.06	15%	25%	\$0.31	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	New	44,249.67	45	\$70,713.23	15%	25%	\$0.14	1	1	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	New	-710.01	20	\$332.74	15%	25%	\$0.28	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	2,592.66	45	\$1,636.92	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	New	9,655.39	3	\$2,696.38	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$824.12	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	New	887.92	32	\$9,402.99	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	Existing	777.58	15	\$22,892.64	20%	50%	\$0.17	1	2	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	66	67	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,868.22	5	\$604.78	5%	40%	\$0.03	1	3	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,706.68	5	\$806.18	15%	50%	\$0.03	2	4	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,852.37	12	\$5,421.18	3%	25%	\$0.10	5	9	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	840.73	16	\$99.88	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,601.14	10	\$1,375.37	7%	60%	\$0.03	10	18	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$33,935.86	15%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,684.91	8	\$468.48	7%	15%	\$0.03	1	1	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.72	5	\$25.38	10%	25%	\$0.01	0	0	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	34	36	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	7	14	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	1	2	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	707.06	3	\$3,018.08	0%	24%	\$0.04	1	2	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	242.75	10	\$2,965.11	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	New	731.42	15	\$18,892.34	20%	50%	\$0.16	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	30	34	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,283.96	5	\$604.22	5%	40%	\$0.04	0	1	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,179.28	5	\$805.36	15%	50%	\$0.04	1	1	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,556.55	12	\$5,096.17	4%	25%	\$0.09	1	2	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	760.98	16	\$99.32	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,068.45	10	\$1,413.72	22%	60%	\$0.03	2	3	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$33,935.86	18%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,574.52	8	\$456.06	7%	15%	\$0.03	0	0	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.43	5	\$25.11	10%	25%	\$0.01	0	0	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	15	17	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	New	662.30	3	\$2,696.38	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.44	32	\$9,402.99	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$91.88	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	Existing	2,838.25	3	\$2,235.63	10%	35%	\$0.05	3	3	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,482.21	3	\$3,018.08	0%	24%	\$0.04	3	3	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	852.01	10	\$2,965.11	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$91.88	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	New	2,845.69	3	\$2,235.63	10%	35%	\$0.06	1	1	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	New	2,482.21	3	\$2,696.38	0%	24%	\$0.04	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	231.55	32	\$9,402.99	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	22,082.67	10	\$672.10	15%	75%	\$0.00	30	30	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	24,653.52	15	\$5,009.26	15%	50%	\$0.02	19	20	OH - TRM
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	5,450.74	15	\$1,886.89	15%	38%	\$0.04	3	3	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	641.91	5	\$115.88	15%	50%	\$0.04	0	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	10,422.44	20	\$8,107.91	15%	50%	\$0.07	8	9	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	5,525.99	15	\$1,901.24	15%	38%	\$0.04	3	3	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	11,565.13	10	\$4,219.91	15%	50%	\$0.05	9	10	VT - TRM
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,379.51	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	Existing	9,336.33	15	\$4,471.81	8%	38%	\$0.05	6	7	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	5,239.61	3	\$477.03	8%	38%	\$0.03	3	4	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	14,722.60	15	\$7,154.67	8%	38%	\$0.05	9	11	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$367.78	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	26,974.62	10	\$3,505.33	8%	38%	\$0.02	18	18	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	Existing	9,082.72	15	\$1,022.49	8%	38%	\$0.01	6	6	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	Existing	4,602.83	3	\$290.80	8%	38%	\$0.02	3	3	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	13,735.71	10	\$2,617.20	8%	38%	\$0.03	9	9	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,552.94	8	\$2,138.51	10%	50%	\$0.21	5	6	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,101.82	8	\$758.18	5%	25%	\$0.11	2	2	Developed from RTF

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Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$578.29	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,307.64	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$8.83	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	27,933.37	17	\$1,929.10	5%	6%	\$0.01	2	3	E3T Website
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	4,356.53	10	\$906.34	15%	36%	\$0.03	8	9	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	27,767.60	17	\$5,358.28	25%	44%	\$0.02	45	48	RSMeans 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,092.58	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,494.83	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$805.63	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$982.21	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$279.49	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$2,728.11	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	Existing	10,639.87	3	\$2,235.63	10%	35%	\$0.05	22	24	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	Existing	9,383.63	3	\$3,018.08	0%	24%	\$0.04	19	22	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$867.43	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	Existing	3,221.02	10	\$2,965.11	15%	24%	\$0.05	3	3	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	182,086.30	10	\$2,640.38	15%	75%	\$0.00	249	249	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	New	8,826.75	3	\$2,235.63	10%	35%	\$0.06	8	8	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	22,082.67	10	\$672.10	15%	75%	\$0.00	10	10	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	24,641.63	15	\$5,009.26	15%	50%	\$0.02	6	6	OH - TRM
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	5,497.79	15	\$1,886.89	15%	38%	\$0.04	1	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	643.84	5	\$115.88	15%	50%	\$0.04	0	0	MI - TRM

Measure Data and Assumptions

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Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	10,485.93	20	\$8,107.91	15%	50%	\$0.07	3	3	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	5,507.02	15	\$1,901.24	15%	38%	\$0.04	1	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	11,630.78	10	\$4,219.91	15%	50%	\$0.05	3	3	VT - TRM
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,379.51	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	New	9,191.70	15	\$4,471.81	8%	38%	\$0.05	2	2	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	New	5,263.72	3	\$477.03	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	15,038.00	15	\$7,154.67	8%	38%	\$0.05	3	3	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$367.78	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	26,470.17	10	\$3,505.33	8%	38%	\$0.02	6	6	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	New	9,080.78	15	\$1,022.49	8%	38%	\$0.01	2	2	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	New	4,509.97	3	\$290.80	8%	38%	\$0.02	1	1	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	13,430.03	10	\$2,617.20	8%	38%	\$0.03	3	3	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,285.60	8	\$2,138.51	10%	50%	\$0.25	2	2	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	912.17	8	\$758.18	5%	25%	\$0.13	1	1	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$578.29	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,307.64	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$8.83	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	23,324.67	17	\$1,929.10	5%	6%	\$0.01	1	1	E3T Website
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	3,603.86	10	\$906.34	15%	36%	\$0.03	3	3	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	New	23,264.69	17	\$3,215.08	25%	44%	\$0.01	16	16	RSMeans 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,092.58	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,494.83	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	4,171.13	10	\$805.63	8%	38%	\$0.03	1	1	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	New	4,229.86	15	\$982.21	8%	38%	\$0.03	1	1	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	New	2,174.05	3	\$279.49	8%	38%	\$0.05	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	6,743.70	12	\$2,728.11	8%	38%	\$0.05	1	1	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	New	7,773.88	3	\$2,696.38	0%	24%	\$0.04	7	7	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$867.43	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	New	714.66	32	\$9,402.99	15%	52%	\$0.37	1	1	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	182,086.30	10	\$2,640.38	15%	75%	\$0.00	79	79	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$250.24	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$24.28	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$114.50	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$136.57	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$8,451.69	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$87.46	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$4,221.84	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$468.76	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$4,290.54	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$83.05	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$32.00	0%	0%	\$10.00	0	0	OPA - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$188.99	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$6,480.09	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,568.77	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$26.76	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$4,516.50	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$11,785.68	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	Existing	66.65	5	\$18.21	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	664.72	10	\$365.29	15%	75%	\$0.08	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	Existing	828.27	5	\$1,141.96	15%	75%	\$0.33	6	6	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	469.84	15	\$228.72	15%	50%	\$0.06	0	0	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	Existing	901.25	18	\$548.77	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	Existing	322.61	3	\$30.63	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	926.73	15	\$457.17	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	Existing	311.09	3	\$2,235.63	10%	35%	\$0.05	4	1	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	Existing	1,221.17	3	\$3,018.08	0%	24%	\$0.04	3	3	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	Existing	419.16	10	\$2,965.11	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$250.24	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$24.28	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$114.50	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$136.57	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	New	435.38	3	\$2,235.63	10%	35%	\$0.06	1	1	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$8,451.69	0%	0%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$87.46	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$4,221.84	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$468.76	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$4,290.54	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$83.05	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$32.00	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Lamps	per Facility	New	0.00	10	\$188.99	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$6,480.09	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,568.77	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$26.76	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$4,516.50	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$11,785.68	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	New	66.68	5	\$18.21	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	664.34	10	\$365.29	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	New	976.09	5	\$1,141.96	15%	75%	\$0.28	2	2	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	476.65	15	\$228.72	15%	50%	\$0.06	0	0	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	New	902.47	18	\$548.77	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	New	322.61	3	\$30.63	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	940.95	15	\$457.17	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	New	1,439.14	3	\$2,696.38	0%	24%	\$0.04	1	1	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	New	131.92	32	\$9,402.99	15%	52%	\$0.37	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$14,250.58	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	Existing	299.07	3	\$3,018.08	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	102.66	10	\$2,965.11	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	109.88	15	\$23.45	15%	35%	\$0.02	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	3,460.27	20	\$3,826.55	100%	at stock turnover	\$0.11	1	1	BEST Simulation
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$9,196.07	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	New	106.03	3	\$2,696.38	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	New	9.97	32	\$9,402.99	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	38.98	15	\$10.76	15%	35%	\$0.03	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,925.59	20	\$2,368.76	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	28,864.87	23	\$67,085.48	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	16,428.42	23	\$8,866.51	6%	at stock turnover	\$0.06	1	1	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,811.69	10	\$2,172.12	15%	45%	\$0.04	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,963.10	15	\$1,253.69	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	428.72	15	\$368.00	15%	75%	\$0.09	0	0	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	14,166.81	15	\$1,226,865.08	15%	50%	\$8.70	1	1	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	12,518.32	12	\$22,949.92	15%	50%	\$0.22	1	1	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	Existing	3,705.62	15	\$35,751.86	20%	50%	\$0.18	0	0	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	27,877.67	23	\$60,429.34	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	11,596.05	18	\$15,115.95	15%	75%	\$0.10	0	0	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	807.63	18	\$1,370.63	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	Existing	5,034.12	10	\$10,661.00	18%	30%	\$0.10	0	0	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	8,526.23	45	\$150,024.33	15%	25%	\$0.16	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,312.14	20	\$2,738.15	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-124.42	45	\$19,903.03	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	22,619.17	23	\$68,831.20	4%	at stock turnover	\$0.32	0	0	BEST Simulation
Metal Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,388.90	3	\$701.69	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,302.02	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,151.96	10	\$3,276.11	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	25,785.63	23	\$13,415.42	3%	at stock turnover	\$0.05	1	1	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,269.36	10	\$2,098.83	15%	45%	\$0.04	0	0	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,456.11	4	\$1,364.40	15%	50%	\$0.03	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,696.61	15	\$1,788.53	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	401.90	15	\$360.20	15%	75%	\$0.09	0	0	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	21,159.14	23	\$50,883.84	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,139.53	23	\$156,645.56	6%	at stock turnover	\$14.31	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,966.54	10	\$1,910.15	15%	45%	\$0.04	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,453.99	15	\$923.11	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$19,132.73	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,843.86	15	\$1,226,865.08	15%	50%	\$15.47	0	0	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	6,945.90	12	\$14,810.33	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	New	2,061.90	15	\$29,315.03	20%	50%	\$0.16	0	0	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	20,500.35	23	\$45,835.20	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	7,392.87	18	\$10,933.88	15%	75%	\$0.11	0	0	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	672.33	18	\$276.00	15%	25%	\$0.31	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	HVAC - Economizer	per Facility	New	2,704.98	10	\$6,176.43	18%	30%	\$0.10	0	0	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-115.12	45	\$113,879.53	15%	25%	\$0.14	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,140.13	20	\$536.40	15%	25%	\$0.28	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-33.80	45	\$2,636.79	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	New	12,940.29	23	\$40,690.93	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Metal Mfg	Cooling	Strategic Energy Management	per Facility	New	1,874.00	3	\$594.10	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,492.85	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	New	160.95	32	\$9,943.72	15%	52%	\$0.35	0	0	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	15,606.04	23	\$10,185.41	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,670.57	10	\$1,267.72	15%	45%	\$0.04	0	0	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,303.93	4	\$829.55	15%	50%	\$0.04	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,484.07	15	\$1,174.16	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$32,238.73	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$35,751.86	20%	50%	\$0.18	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$88.88	15%	25%	\$0.03	0	0	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.95	33%	60%	\$0.11	0	0	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.77	15%	30%	\$0.06	1	2	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	5	5	AEO 2013
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	2	2	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	3	7	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	22.97	15	\$6.31	100%	at stock turnover	\$0.04	0	1	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$701.69	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$3,276.11	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$29,315.03	20%	50%	\$0.16	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.88	15%	25%	\$0.03	0	0	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$127.86	44%	60%	\$0.06	0	0	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,418.97	15%	30%	\$0.06	0	0	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	2	2	AEO 2013
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	1	1	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	2	3	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$594.10	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$9,943.72	15%	52%	\$0.35	0	0	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,193.99	23	\$41,382.86	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,949.92	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	Existing	18,423.23	15	\$35,751.86	20%	50%	\$0.18	1	1	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,866.38	23	\$31,777.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	3,242.17	18	\$15,115.95	15%	75%	\$0.10	0	0	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,326.94	18	\$1,370.63	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	74,355.41	45	\$150,024.33	15%	25%	\$0.16	2	2	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,239.46	20	\$2,738.15	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	27,952.13	45	\$19,903.03	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	Existing	16,188.57	3	\$701.69	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,302.02	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	5,593.93	10	\$3,276.11	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,849.99	23	\$36,445.59	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,810.33	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	New	17,685.45	15	\$29,315.03	20%	50%	\$0.16	0	0	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,932.35	23	\$24,102.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,105.86	18	\$10,933.88	15%	75%	\$0.11	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-697.50	18	\$276.00	15%	25%	\$0.31	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	71,626.25	45	\$113,879.53	15%	25%	\$0.14	1	1	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,149.27	20	\$536.40	15%	25%	\$0.28	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,196.70	45	\$2,636.79	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	New	15,549.48	3	\$594.10	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,492.85	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,437.25	32	\$9,943.72	15%	52%	\$0.35	0	0	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$35,751.86	20%	50%	\$0.18	1	1	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	36	37	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,745.93	5	\$605.01	5%	40%	\$0.03	1	2	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.78	5	\$806.16	15%	50%	\$0.03	1	2	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.72	3%	25%	\$0.10	3	5	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.80	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.31	7%	60%	\$0.03	5	10	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$191,795.13	15%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$467.79	7%	15%	\$0.03	0	1	CA - DEER
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.72	5	\$24.95	10%	25%	\$0.01	0	0	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	18	20	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	4	7	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	0	1	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.59	3	\$701.69	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$3,276.11	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$29,315.03	20%	50%	\$0.16	0	0	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	16	19	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,381.35	5	\$603.45	5%	40%	\$0.04	0	0	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,074.77	5	\$806.16	15%	50%	\$0.04	0	0	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,095.82	4%	25%	\$0.09	1	1	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	759.99	16	\$99.80	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,414.29	22%	60%	\$0.03	1	1	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$191,795.13	18%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.88	7%	15%	\$0.03	0	0	CA - DEER
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.14	5	\$24.95	10%	25%	\$0.01	0	0	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	8	9	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	2	3	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	732.80	3	\$594.10	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$9,943.72	15%	52%	\$0.35	0	0	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$389.83	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,822.49	3	\$2,101.95	5%	39%	\$0.08	2	2	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,583.25	3	\$701.69	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	547.09	10	\$3,276.11	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$389.83	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	New	1,824.38	3	\$2,101.95	5%	39%	\$0.08	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,583.25	3	\$594.10	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	148.03	32	\$9,943.72	15%	52%	\$0.35	0	0	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	2,662.51	10	\$81.08	15%	75%	\$0.00	2	2	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	2,967.30	15	\$603.45	15%	50%	\$0.02	1	1	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	660.13	15	\$227.66	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	77.26	5	\$14.03	15%	50%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,271.78	20	\$977.69	15%	50%	\$0.07	1	1	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	661.04	15	\$229.22	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,403.70	10	\$508.34	15%	50%	\$0.05	1	1	VT - TRM
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$5,847.41	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	1,107.01	15	\$539.52	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	630.64	3	\$57.69	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	1,813.08	15	\$862.30	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,559.31	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	11,833.69	10	\$1,540.60	8%	38%	\$0.02	4	4	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	Existing	3,984.56	15	\$449.08	8%	38%	\$0.01	2	2	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	Existing	2,019.25	3	\$127.86	8%	38%	\$0.02	1	1	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	6,025.84	10	\$1,150.77	8%	38%	\$0.03	2	2	6th Plan
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	817.15	8	\$1,055.65	10%	50%	\$0.22	2	2	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	579.78	8	\$374.23	5%	25%	\$0.11	1	1	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$2,451.24	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,114.91	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$4.68	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	14,386.75	17	\$952.74	5%	6%	\$0.01	1	1	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,253.16	10	\$447.52	15%	36%	\$0.03	2	2	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	14,287.56	17	\$2,646.15	25%	44%	\$0.02	14	14	RSMeans 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,495.38	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$721.96	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$514.57	8%	38%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$626.84	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$177.76	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$1,740.19	8%	38%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Retrocommissioning	per Facility	Existing	5,595.22	3	\$2,101.95	5%	39%	\$0.08	9	10	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	Existing	4,984.62	3	\$701.69	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$419.45	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	1,683.97	10	\$3,276.11	15%	24%	\$0.05	1	1	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$1,529.68	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	New	4,789.65	3	\$2,101.95	5%	39%	\$0.08	3	3	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	2,662.51	10	\$81.08	15%	75%	\$0.00	1	1	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	2,967.09	15	\$603.45	15%	50%	\$0.02	0	0	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	661.99	15	\$227.66	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	77.53	5	\$14.03	15%	50%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	1,280.46	20	\$977.69	15%	50%	\$0.07	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	663.10	15	\$229.22	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	1,409.45	10	\$508.34	15%	50%	\$0.05	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$5,847.41	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	New	1,113.86	15	\$539.52	8%	38%	\$0.05	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	633.80	3	\$57.69	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	1,822.33	15	\$862.30	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,559.31	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	11,617.19	10	\$1,540.60	8%	38%	\$0.02	1	1	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	New	3,985.35	15	\$449.08	8%	38%	\$0.01	0	0	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	New	1,979.33	3	\$127.86	8%	38%	\$0.02	0	0	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	5,894.17	10	\$1,150.77	8%	38%	\$0.03	1	1	6th Plan
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	697.41	8	\$1,055.65	10%	50%	\$0.25	1	1	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	494.83	8	\$374.23	5%	25%	\$0.13	0	0	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$2,451.24	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,114.91	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$4.68	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	12,407.84	17	\$952.74	5%	6%	\$0.01	0	0	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,930.34	10	\$447.52	15%	36%	\$0.03	1	1	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	12,379.81	17	\$1,587.38	25%	44%	\$0.01	5	5	RSMeans 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,495.38	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$721.96	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,656.96	10	\$514.57	8%	38%	\$0.03	0	0	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	New	2,694.36	15	\$626.84	8%	38%	\$0.03	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,393.77	3	\$177.76	8%	38%	\$0.05	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	4,323.35	12	\$1,740.19	8%	38%	\$0.05	1	1	6th Plan
Metal Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	New	4,307.15	3	\$594.10	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$419.45	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	New	387.68	32	\$9,943.72	15%	52%	\$0.35	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$1,529.68	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$159.05	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$77.97	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$368.00	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$439.73	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$35,825.15	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$282.24	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$13,578.47	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,507.85	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$13,799.89	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$137.22	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$135.66	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$801.49	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$27,467.25	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,110.82	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$53.02	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	80,444.23	10	\$7,439.47	15%	75%	\$0.01	61	61	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$23,369.38	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	Existing	385.54	5	\$104.47	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	3,815.95	10	\$2,086.36	15%	75%	\$0.08	3	3	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,517.54	5	\$2,264.12	15%	75%	\$0.33	5	6	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	939.11	15	\$449.08	15%	50%	\$0.06	0	0	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,801.23	18	\$1,077.48	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	632.30	3	\$59.25	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,852.28	15	\$898.16	15%	50%	\$0.06	1	1	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Retrocommissioning	per Facility	Existing	572.91	3	\$2,101.95	5%	39%	\$0.08	6	1	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	Existing	2,422.74	3	\$701.69	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	Existing	772.12	10	\$3,276.11	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$159.05	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$77.97	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$368.00	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$439.73	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	New	771.73	3	\$2,101.95	5%	39%	\$0.08	2	1	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$35,825.15	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$282.24	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$13,578.47	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,507.85	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$13,799.89	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$137.22	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$135.66	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$801.49	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$27,467.25	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,110.82	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$53.02	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	New	80,477.40	10	\$7,439.47	15%	75%	\$0.01	19	19	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$23,369.38	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	New	385.94	5	\$104.47	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	3,804.77	10	\$2,086.36	15%	75%	\$0.08	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	New	1,712.15	5	\$2,264.12	15%	75%	\$0.28	2	2	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	940.63	15	\$449.08	15%	50%	\$0.06	0	0	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	New	1,808.79	18	\$1,077.48	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	New	632.56	3	\$59.25	15%	50%	\$0.04	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,856.89	15	\$898.16	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	New	2,856.88	3	\$594.10	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	New	231.41	32	\$9,943.72	15%	52%	\$0.35	0	0	6th Plan
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,949.92	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	482.28	3	\$701.69	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	166.43	10	\$3,276.11	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	176.65	15	\$37.42	15%	35%	\$0.02	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,572.57	20	\$6,162.45	100%	at stock turnover	\$0.11	1	1	BEST Simulation
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,810.33	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	New	171.09	3	\$594.10	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	16.13	32	\$9,943.72	15%	52%	\$0.35	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	62.69	15	\$17.15	15%	35%	\$0.03	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,101.06	20	\$3,814.75	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	20,177.29	23	\$46,894.49	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	11,483.89	23	\$6,197.92	6%	at stock turnover	\$0.06	2	2	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	5,466.76	10	\$1,517.94	15%	45%	\$0.04	0	1	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,374.65	15	\$876.66	15%	60%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	300.21	15	\$257.56	15%	75%	\$0.09	0	0	BEST Simulation
Mining and Extraction	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	9,920.17	15	\$42,582.68	15%	50%	\$0.43	3	3	BEST Simulation
Mining and Extraction	Cooling	Destratification Fans (HVLS)	per Facility	Existing	8,765.86	12	\$16,042.33	15%	50%	\$0.22	2	3	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	Existing	2,594.84	15	\$25,541.60	20%	50%	\$0.17	1	1	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	19,487.21	23	\$42,241.68	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

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Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	Existing	8,120.07	18	\$10,566.65	15%	75%	\$0.10	1	1	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	565.54	18	\$957.89	15%	25%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	Existing	3,525.11	10	\$7,452.35	18%	30%	\$0.10	1	0	DEER
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	5,970.44	45	\$104,870.46	15%	25%	\$0.16	0	1	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	Existing	1,619.06	20	\$1,913.57	15%	25%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-87.12	45	\$13,912.38	45%	50%	\$0.06	0	0	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	Existing	15,811.39	23	\$48,114.80	4%	at stock turnover	\$0.32	1	1	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$90.38	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	Existing	820.01	10	\$1,408.94	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	18,024.83	23	\$9,377.73	3%	at stock turnover	\$0.05	2	2	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	5,087.27	10	\$1,466.74	15%	45%	\$0.04	0	0	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	7,317.42	4	\$953.62	15%	50%	\$0.03	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,888.28	15	\$1,249.72	15%	60%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	281.42	15	\$251.39	15%	75%	\$0.09	0	0	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	14,790.79	23	\$35,569.12	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	796.56	23	\$210,538.99	6%	at stock turnover	\$27.51	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,876.31	10	\$1,335.39	15%	45%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,017.73	15	\$644.75	15%	60%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,328.19	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	5,490.34	15	\$42,582.68	15%	50%	\$0.77	1	1	BEST Simulation
Mining and Extraction	Cooling	De-stratification Fans (HVLS)	per Facility	New	4,857.28	12	\$10,352.39	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	New	1,441.89	15	\$21,039.19	20%	50%	\$0.16	0	0	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	14,330.27	23	\$32,040.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	New	5,174.68	18	\$7,643.34	15%	75%	\$0.11	0	0	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	470.16	18	\$192.46	15%	25%	\$0.31	0	0	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	New	1,893.37	10	\$4,317.64	18%	30%	\$0.10	0	0	DEER
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	New	-80.50	45	\$79,604.83	15%	25%	\$0.14	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	New	797.29	20	\$374.63	15%	25%	\$0.28	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-23.66	45	\$1,842.78	45%	50%	\$0.06	0	0	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	New	9,045.60	23	\$28,444.02	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$242.46	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	New	118.33	32	\$4,561.78	15%	52%	\$0.12	0	0	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	10,909.02	23	\$7,119.87	3%	at stock turnover	\$0.07	1	1	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,569.23	10	\$886.24	15%	45%	\$0.04	0	0	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	3,712.51	4	\$579.64	15%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,038.78	15	\$821.24	15%	60%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$2,237.97	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	Existing	144.87	15	\$25,541.60	20%	50%	\$0.17	0	1	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	477.21	5	\$89.14	15%	25%	\$0.03	1	1	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.47	10	\$208.85	33%	60%	\$0.11	1	1	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,522.35	10	\$1,426.42	15%	30%	\$0.06	4	8	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	22	22	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	11	11	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	16	31	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	47.55	15	\$1.56	100%	at stock turnover	\$0.04	2	5	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.75	10	\$1,408.94	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	New	126.40	15	\$21,039.19	20%	50%	\$0.16	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	415.50	5	\$88.70	15%	25%	\$0.03	0	0	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.25	10	\$127.94	44%	60%	\$0.06	0	0	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,196.01	10	\$1,419.66	15%	30%	\$0.06	1	2	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	10	11	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	5	6	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	7	14	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	23.57	15	\$6.30	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.37	32	\$4,561.78	15%	52%	\$0.12	0	0	6th Plan
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,329.76	23	\$28,927.70	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$16,042.33	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Heating	Energy Management System	per Facility	Existing	12,900.87	15	\$25,541.60	20%	50%	\$0.17	4	4	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,003.67	23	\$22,213.13	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	Existing	2,270.33	18	\$10,566.65	15%	75%	\$0.10	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	929.19	18	\$957.89	15%	25%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	Existing	52,067.43	45	\$104,870.46	15%	25%	\$0.16	6	6	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	Existing	867.94	20	\$1,913.57	15%	25%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	19,573.51	45	\$13,912.38	45%	50%	\$0.06	1	1	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$90.38	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	Existing	3,917.16	10	\$1,408.94	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,885.40	23	\$25,476.41	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$10,352.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Heating	Energy Management System	per Facility	New	12,367.50	15	\$21,039.19	20%	50%	\$0.16	1	1	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,845.89	23	\$16,848.48	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	New	1,474.02	18	\$7,643.34	15%	75%	\$0.11	0	0	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-487.77	18	\$192.46	15%	25%	\$0.31	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	New	50,088.50	45	\$79,604.83	15%	25%	\$0.14	2	2	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	New	-803.69	20	\$374.63	15%	25%	\$0.28	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	New	2,937.53	45	\$1,842.78	45%	50%	\$0.06	0	0	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$242.46	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	New	1,027.78	32	\$4,561.78	15%	52%	\$0.12	0	0	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	Existing	783.99	15	\$25,541.60	20%	50%	\$0.17	3	4	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	168	171	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,749.18	5	\$604.70	5%	40%	\$0.03	3	7	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,822.29	5	\$806.30	15%	50%	\$0.03	5	10	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,892.45	12	\$5,421.17	3%	25%	\$0.10	12	23	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	840.73	16	\$99.80	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,598.06	10	\$1,375.28	7%	60%	\$0.03	25	45	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$6,656.93	15%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,684.01	8	\$468.53	7%	15%	\$0.03	2	3	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.72	5	\$25.27	10%	25%	\$0.01	0	0	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	86	91	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	17	35	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	2	5	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	280.06	10	\$1,408.94	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	New	735.33	15	\$21,039.19	20%	50%	\$0.16	1	1	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	75	86	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,384.46	5	\$604.10	5%	40%	\$0.04	1	2	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,078.78	5	\$805.49	15%	50%	\$0.04	1	2	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,585.15	12	\$5,096.17	4%	25%	\$0.09	4	5	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	760.98	16	\$99.42	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,068.45	10	\$1,413.76	22%	60%	\$0.03	4	7	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$6,656.93	18%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,574.52	8	\$456.08	7%	15%	\$0.03	0	1	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.43	5	\$25.11	10%	25%	\$0.01	0	0	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	39	43	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	8	16	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	New	60.35	32	\$4,561.78	15%	52%	\$0.12	0	0	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	Existing	983.38	3	\$4,640.53	10%	40%	\$0.08	3	3	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	295.20	10	\$1,408.94	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	New	983.99	3	\$4,640.53	10%	40%	\$0.07	1	1	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	New	79.94	32	\$4,561.78	15%	52%	\$0.12	0	0	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	42,065.69	10	\$1,280.57	15%	75%	\$0.00	147	147	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	47,430.47	15	\$9,542.08	15%	50%	\$0.02	95	98	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	10,550.61	15	\$3,594.52	15%	38%	\$0.04	13	14	MI - TRM
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,234.79	5	\$220.87	15%	50%	\$0.04	2	3	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	20,128.10	20	\$15,445.10	15%	50%	\$0.07	38	44	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	10,564.97	15	\$3,621.64	15%	38%	\$0.04	13	14	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	22,447.87	10	\$8,038.75	15%	50%	\$0.05	44	47	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$405.91	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	Existing	18,120.81	15	\$8,518.32	8%	38%	\$0.05	30	33	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	Existing	10,106.99	3	\$908.64	8%	38%	\$0.03	17	18	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	28,573.87	15	\$13,629.27	8%	38%	\$0.05	47	52	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$108.24	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	41,617.28	10	\$5,408.46	8%	38%	\$0.02	72	73	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	Existing	14,021.90	15	\$1,577.48	8%	38%	\$0.01	24	24	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	Existing	7,172.54	3	\$448.72	8%	38%	\$0.02	12	13	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	21,403.86	10	\$4,038.32	8%	38%	\$0.03	36	37	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,563.38	8	\$3,964.06	10%	50%	\$0.25	28	30	Developed from RTF
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,818.75	8	\$1,405.42	5%	25%	\$0.13	10	11	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$22,325.38	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$85.19	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	46,109.25	17	\$8,938.95	5%	6%	\$0.02	13	13	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	7,253.49	10	\$1,679.82	15%	36%	\$0.03	44	45	6th Plan
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	Existing	44,415.88	17	\$22,216.49	25%	44%	\$0.05	238	245	RSMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$29,917.63	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$14,462.58	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	49,912.96	10	\$9,464.80	8%	38%	\$0.03	86	87	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	Existing	50,419.02	15	\$11,539.48	8%	38%	\$0.03	88	88	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	Existing	26,281.26	3	\$3,282.35	8%	38%	\$0.05	45	46	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	81,692.21	12	\$32,054.08	8%	38%	\$0.05	139	143	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	Existing	17,535.46	3	\$4,640.53	10%	40%	\$0.08	147	153	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,354.77	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	Existing	5,553.25	10	\$1,408.94	15%	24%	\$0.02	15	15	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$825.46	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	New	22,321.42	3	\$4,640.53	10%	40%	\$0.07	37	37	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$1,280.57	15%	75%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$9,542.08	15%	50%	\$10.00	0	0	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$3,594.52	15%	38%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$220.87	15%	50%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$15,445.10	15%	50%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$3,621.64	15%	38%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$8,038.75	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$405.91	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$8,518.32	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$908.64	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$13,629.27	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$108.24	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$5,408.46	8%	38%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	New	0.00	15	\$1,577.48	8%	38%	\$10.00	0	0	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$448.72	8%	38%	\$10.00	0	0	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$4,038.32	8%	38%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	3,251.15	8	\$3,964.06	10%	50%	\$0.20	7	7	Developed from RTF
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2,308.96	8	\$1,405.42	5%	25%	\$0.10	3	3	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$22,325.38	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$85.19	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	58,424.58	17	\$8,938.95	5%	6%	\$0.02	3	3	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	9,142.40	10	\$1,679.82	15%	36%	\$0.03	11	11	6th Plan
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	New	58,379.48	17	\$13,329.93	25%	44%	\$0.03	61	61	RSMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$29,917.63	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$14,462.58	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	48,883.29	10	\$9,464.80	8%	38%	\$0.03	27	27	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	New	49,700.17	15	\$11,539.48	8%	38%	\$0.03	27	27	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	New	25,709.47	3	\$3,282.35	8%	38%	\$0.05	14	14	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	New	79,748.21	12	\$32,054.08	8%	38%	\$0.05	44	44	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,354.77	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	New	1,812.28	32	\$4,561.78	15%	52%	\$0.12	4	4	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$825.46	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$51.09	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$240.41	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$286.73	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$183.74	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$8,862.21	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$983.98	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$9,006.93	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,080.48	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$35.61	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$817.67	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$15,629.76	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	Existing	1,081.71	5	\$292.26	15%	75%	\$0.07	4	4	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	10,716.03	10	\$5,844.94	15%	75%	\$0.08	37	37	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	Existing	1,433.72	5	\$1,514.37	15%	75%	\$0.25	15	15	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$557.94	15%	50%	\$10.00	0	0	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$1,339.02	15%	50%	\$10.00	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$74.42	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$1,115.87	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	Existing	817.87	3	\$4,640.53	10%	40%	\$0.08	13	4	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	Existing	737.99	10	\$1,408.94	15%	24%	\$0.02	1	1	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$51.09	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$240.41	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$286.73	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	New	447.01	3	\$4,640.53	10%	40%	\$0.07	6	3	Energy Management Program Design for PC
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$183.74	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$8,862.21	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$983.98	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$9,006.93	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,080.48	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$35.61	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$817.67	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$15,629.76	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	New	1,072.37	5	\$292.26	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	10,683.95	10	\$5,844.94	15%	75%	\$0.08	12	12	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	New	1,073.77	5	\$1,514.37	15%	75%	\$0.33	6	6	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,140.24	15	\$557.94	15%	50%	\$0.06	1	1	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	New	2,250.96	18	\$1,339.02	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	New	787.19	3	\$74.42	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	2,341.17	15	\$1,115.87	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	New	146.89	32	\$4,561.78	15%	52%	\$0.12	1	1	6th Plan
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$16,042.33	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	Existing	116.70	10	\$1,408.94	15%	24%	\$0.02	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	123.63	15	\$26.41	15%	35%	\$0.02	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	3,895.37	20	\$4,307.71	100%	at stock turnover	\$0.11	3	3	BEST Simulation
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$10,352.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	New	11.29	32	\$4,561.78	15%	52%	\$0.12	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	43.88	15	\$12.12	15%	35%	\$0.03	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,167.72	20	\$2,666.61	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	39,656.79	23	\$92,167.21	2%	at stock turnover	\$0.13	11	10	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	22,570.64	23	\$12,181.50	6%	at stock turnover	\$0.06	13	13	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,732.30	10	\$2,983.34	15%	45%	\$0.04	3	3	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,697.05	15	\$1,722.92	15%	60%	\$0.07	1	1	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	589.01	15	\$506.19	15%	75%	\$0.09	0	0	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	19,463.45	15	\$71,618.41	15%	50%	\$0.37	16	19	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	17,198.64	12	\$31,529.85	15%	50%	\$0.22	14	18	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	Existing	5,091.07	15	\$48,435.91	20%	50%	\$0.18	4	4	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	38,300.49	23	\$83,022.49	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	15,931.54	18	\$20,767.88	15%	75%	\$0.10	3	4	AEG research & analysis
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,109.59	18	\$1,882.67	15%	25%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	Existing	6,916.26	10	\$14,646.91	18%	30%	\$0.10	3	1	DEER
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	11,714.00	45	\$206,114.19	15%	25%	\$0.16	3	3	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,176.59	20	\$3,760.97	15%	25%	\$0.07	1	1	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-170.93	45	\$27,343.70	45%	50%	\$0.06	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	31,075.97	23	\$94,565.62	4%	at stock turnover	\$0.32	3	3	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	Existing	4,655.93	3	\$746.13	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$152.01	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,582.65	10	\$3,444.20	15%	24%	\$0.04	0	0	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	35,426.29	23	\$18,431.14	3%	at stock turnover	\$0.05	11	11	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,987.21	10	\$2,882.76	15%	45%	\$0.04	1	2	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,365.41	4	\$1,874.29	15%	50%	\$0.03	2	3	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,704.81	15	\$2,456.22	15%	60%	\$0.07	1	1	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	552.16	15	\$494.08	15%	75%	\$0.09	0	0	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	29,070.06	23	\$69,908.14	2%	at stock turnover	\$0.13	4	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	13,574.45	23	\$26,276.72	6%	at stock turnover	\$0.20	5	5	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,522.23	10	\$2,624.61	15%	45%	\$0.04	1	1	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,778.88	15	\$1,267.16	15%	60%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,233.84	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	10,301.42	15	\$71,618.41	15%	50%	\$0.66	3	3	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	9,121.47	12	\$20,346.80	15%	50%	\$0.25	3	3	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	New	2,707.67	15	\$39,594.20	20%	50%	\$0.16	1	1	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	28,164.96	23	\$62,971.94	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	10,156.90	18	\$15,022.39	15%	75%	\$0.11	1	1	AEG research & analysis
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	882.97	18	\$378.30	15%	25%	\$0.31	0	0	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	New	3,516.34	10	\$8,485.98	18%	30%	\$0.10	1	0	DEER
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-151.18	45	\$156,456.64	15%	25%	\$0.14	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,497.33	20	\$736.39	15%	25%	\$0.28	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-44.39	45	\$3,621.79	45%	50%	\$0.06	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	New	17,778.36	23	\$55,904.34	4%	at stock turnover	\$0.33	1	1	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	New	2,460.18	3	\$597.31	0%	5%	\$0.01	0	0	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$407.79	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	New	211.38	32	\$9,999.18	15%	52%	\$0.33	0	0	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	21,440.78	23	\$13,993.50	3%	at stock turnover	\$0.07	4	4	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,042.92	10	\$1,741.85	15%	45%	\$0.04	0	0	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,286.94	4	\$1,139.27	15%	50%	\$0.04	0	0	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,038.93	15	\$1,614.14	15%	60%	\$0.07	0	0	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$3,763.97	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$48,435.91	20%	50%	\$0.18	1	2	BEST Simulation
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$89.11	15%	25%	\$0.03	2	3	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.90	33%	60%	\$0.11	2	4	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.45	15%	30%	\$0.06	13	25	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	68	69	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	34	35	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	48	95	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	22.97	15	\$6.31	100%	at stock turnover	\$0.04	5	15	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$746.13	0%	5%	\$0.01	0	1	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$3,444.20	15%	24%	\$0.04	0	0	6th Plan
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$39,594.20	20%	50%	\$0.16	0	1	BEST Simulation
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.75	15%	25%	\$0.03	0	1	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$127.98	44%	60%	\$0.06	0	0	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,419.72	15%	30%	\$0.06	4	6	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	30	35	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	15	17	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	22	43	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	1	3	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$597.31	0%	5%	\$0.01	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$9,999.18	15%	52%	\$0.33	0	0	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	8,509.78	23	\$56,854.97	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$31,529.85	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	Existing	25,311.26	15	\$48,435.91	20%	50%	\$0.18	26	26	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,938.05	23	\$43,658.05	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	4,454.34	18	\$20,767.88	15%	75%	\$0.10	1	1	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,823.05	18	\$1,882.67	15%	25%	\$0.07	1	1	BEST Simulation
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	102,155.20	45	\$206,114.19	15%	25%	\$0.16	35	36	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,702.87	20	\$3,760.97	15%	25%	\$0.07	1	1	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	38,402.80	45	\$27,343.70	45%	50%	\$0.06	7	7	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	Existing	22,241.11	3	\$746.13	0%	5%	\$0.01	4	4	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$152.01	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	7,685.38	10	\$3,444.20	15%	24%	\$0.04	3	3	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	13,532.68	23	\$50,071.76	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$20,346.80	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	New	24,297.64	15	\$39,594.20	20%	50%	\$0.16	8	8	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	9,524.20	23	\$33,114.27	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,893.20	18	\$15,022.39	15%	75%	\$0.11	0	0	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-958.28	18	\$378.30	15%	25%	\$0.31	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	98,405.67	45	\$156,456.64	15%	25%	\$0.14	11	11	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,578.96	20	\$736.39	15%	25%	\$0.28	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,765.75	45	\$3,621.79	45%	50%	\$0.06	0	0	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	New	21,363.07	3	\$597.31	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$407.79	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,974.61	32	\$9,999.18	15%	52%	\$0.33	1	1	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$48,435.91	20%	50%	\$0.18	8	13	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	519	527	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,863.34	5	\$604.68	5%	40%	\$0.03	11	23	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,700.38	5	\$806.30	15%	50%	\$0.03	14	30	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.17	3%	25%	\$0.10	36	71	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.85	1%	3%	\$0.01	1	1	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.30	7%	60%	\$0.03	78	140	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$11,196.07	15%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$468.51	7%	15%	\$0.03	5	9	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.19	5	\$25.30	10%	25%	\$0.01	0	1	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	264	281	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	54	107	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	63.55	15	-\$8.49	100%	at stock turnover	\$0.04	6	17	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.96	3	\$746.13	0%	5%	\$0.01	1	3	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$3,444.20	15%	24%	\$0.04	1	1	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$39,594.20	20%	50%	\$0.16	3	4	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	233	266	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,381.35	5	\$604.13	5%	40%	\$0.04	3	5	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,074.77	5	\$805.48	15%	50%	\$0.04	4	6	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,096.21	4%	25%	\$0.09	11	16	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	759.99	16	\$99.40	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.80	22%	60%	\$0.03	13	20	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$11,196.07	18%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.13	7%	15%	\$0.03	2	2	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.14	5	\$25.12	10%	25%	\$0.01	0	0	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	119	134	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	25	48	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	60.28	15	-\$96.58	100%	at stock turnover	\$0.05	1	4	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	732.80	3	\$597.31	0%	5%	\$0.01	0	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$9,999.18	15%	52%	\$0.33	0	0	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$45.51	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,752.59	3	\$865.01	5%	39%	\$0.07	21	21	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,522.53	3	\$746.13	0%	5%	\$0.01	3	3	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	526.11	10	\$3,444.20	15%	24%	\$0.04	2	2	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$45.51	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	New	1,754.41	3	\$865.01	5%	39%	\$0.07	6	6	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,522.53	3	\$597.31	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	142.35	32	\$9,999.18	15%	52%	\$0.33	1	1	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	5,016.17	10	\$152.74	15%	75%	\$0.00	54	54	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	5,649.54	15	\$1,137.90	15%	50%	\$0.02	35	36	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,243.68	15	\$428.64	15%	38%	\$0.04	5	5	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	145.56	5	\$26.31	15%	50%	\$0.04	1	1	MI - TRM
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	2,396.04	20	\$1,841.80	15%	50%	\$0.07	14	16	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,245.39	15	\$431.82	15%	38%	\$0.04	5	5	MI - TRM
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	2,644.57	10	\$958.58	15%	50%	\$0.05	16	17	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$682.69	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	2,134.90	15	\$1,015.75	8%	38%	\$0.05	11	12	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,191.36	3	\$108.32	8%	38%	\$0.03	6	7	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	3,366.54	15	\$1,625.25	8%	38%	\$0.05	17	19	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$182.05	15%	50%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	9,190.77	10	\$1,196.43	8%	38%	\$0.02	49	49	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	Existing	3,094.65	15	\$348.99	8%	38%	\$0.01	17	17	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,584.86	3	\$99.22	8%	38%	\$0.02	8	9	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	4,680.04	10	\$893.32	8%	38%	\$0.03	24	25	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	245.91	8	\$384.13	10%	50%	\$0.25	8	9	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	174.47	8	\$136.17	5%	25%	\$0.13	3	3	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$286.27	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$49.70	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$0.18	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	4,471.46	17	\$346.44	5%	6%	\$0.01	4	4	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	688.99	10	\$162.75	15%	36%	\$0.03	13	13	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	4,390.48	17	\$962.41	25%	44%	\$0.02	74	75	RSMeans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$66.63	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$32.22	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	2,524.05	10	\$484.25	8%	38%	\$0.03	13	14	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	Existing	2,549.56	15	\$590.39	8%	38%	\$0.03	14	14	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	1,328.24	3	\$167.94	8%	38%	\$0.05	7	7	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	4,128.75	12	\$1,640.09	8%	38%	\$0.05	21	22	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	Existing	1,683.66	3	\$865.01	5%	39%	\$0.07	49	51	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,552.82	3	\$746.13	0%	5%	\$0.01	7	7	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$18.66	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	514.14	10	\$3,444.20	15%	24%	\$0.04	4	4	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$297.47	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Commissioning	per Facility	New	1,666.65	3	\$865.01	5%	39%	\$0.07	16	16	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	5,016.17	10	\$152.74	15%	75%	\$0.00	17	17	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	5,589.99	15	\$1,137.90	15%	50%	\$0.02	11	11	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,239.87	15	\$428.64	15%	38%	\$0.04	2	2	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	146.06	5	\$26.31	15%	50%	\$0.04	0	0	MI - TRM
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	2,412.39	20	\$1,841.80	15%	50%	\$0.07	5	5	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,256.60	15	\$431.82	15%	38%	\$0.04	2	2	MI - TRM
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	2,655.40	10	\$958.58	15%	50%	\$0.05	5	5	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$682.69	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	New	2,145.80	15	\$1,015.75	8%	38%	\$0.05	4	4	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	1,194.09	3	\$108.32	8%	38%	\$0.03	2	2	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	3,385.99	15	\$1,625.25	8%	38%	\$0.05	6	6	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$182.05	15%	50%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	9,022.62	10	\$1,196.43	8%	38%	\$0.02	15	15	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	New	3,095.27	15	\$348.99	8%	38%	\$0.01	5	5	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	New	1,537.27	3	\$99.22	8%	38%	\$0.02	3	3	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	4,577.78	10	\$893.32	8%	38%	\$0.03	8	8	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	242.68	8	\$384.13	10%	50%	\$0.25	3	3	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	172.19	8	\$136.17	5%	25%	\$0.13	1	1	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$286.27	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$49.70	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$0.18	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,476.40	17	\$346.44	5%	6%	\$0.01	1	1	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	682.31	10	\$162.75	15%	36%	\$0.03	4	4	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,458.62	17	\$577.46	25%	44%	\$0.01	24	24	RSMeans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$66.63	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$32.22	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,504.32	10	\$484.25	8%	38%	\$0.03	4	4	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	New	2,539.57	15	\$590.39	8%	38%	\$0.03	4	4	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,313.70	3	\$167.94	8%	38%	\$0.05	2	2	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	4,074.98	12	\$1,640.09	8%	38%	\$0.05	7	7	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	New	1,553.90	3	\$597.31	0%	5%	\$0.01	2	2	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$18.66	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	New	134.91	32	\$9,999.18	15%	52%	\$0.33	1	1	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$297.47	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$150.46	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$15.29	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$71.91	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$85.75	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,182.60	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$54.98	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,650.28	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$294.28	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,693.52	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$44.51	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$15.93	0%	0%	\$10.00	0	0	OPA - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$93.57	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,206.81	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,124.79	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$19.21	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,419.35	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$8,450.39	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	Existing	63.72	5	\$17.20	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	630.66	10	\$344.89	15%	75%	\$0.08	7	7	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	Existing	591.13	5	\$818.77	15%	75%	\$0.33	31	32	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	906.71	15	\$433.46	15%	50%	\$0.06	6	6	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,739.07	18	\$1,040.23	15%	50%	\$0.06	11	11	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	610.48	3	\$57.80	15%	50%	\$0.04	4	4	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,788.37	15	\$866.83	15%	50%	\$0.06	11	11	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	Existing	258.03	3	\$865.01	5%	39%	\$0.07	39	8	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	Existing	876.03	3	\$746.13	0%	5%	\$0.01	4	4	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	Existing	302.29	10	\$3,444.20	15%	24%	\$0.04	3	3	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$150.46	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$15.29	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$71.91	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$85.75	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Commissioning	per Facility	New	258.55	3	\$865.01	5%	39%	\$0.07	12	6	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,182.60	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$54.98	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,650.28	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$294.28	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,693.52	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$44.51	0%	0%	\$10.00	0	0	MT - IRP 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$15.93	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$93.57	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,206.81	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,124.79	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$19.21	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,419.35	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$8,450.39	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	New	63.78	5	\$17.20	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	628.82	10	\$344.89	15%	75%	\$0.08	2	2	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	New	589.45	5	\$818.77	15%	75%	\$0.33	10	10	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	884.64	15	\$433.46	15%	50%	\$0.06	2	2	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	New	1,746.37	18	\$1,040.23	15%	50%	\$0.06	3	3	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	New	610.73	3	\$57.80	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,816.36	15	\$866.83	15%	50%	\$0.06	4	4	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	New	876.03	3	\$597.31	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	New	79.66	32	\$9,999.18	15%	52%	\$0.33	1	1	6th Plan
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$31,529.85	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	662.59	3	\$746.13	0%	5%	\$0.01	0	1	BEST Simulation
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	228.66	10	\$3,444.20	15%	24%	\$0.04	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	242.70	15	\$51.88	15%	35%	\$0.02	1	1	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	7,656.03	20	\$8,466.44	100%	at stock turnover	\$0.11	16	16	BEST Simulation
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$20,346.80	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	New	235.06	3	\$597.31	0%	5%	\$0.01	0	0	BEST Simulation
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	22.17	32	\$9,999.18	15%	52%	\$0.33	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	86.13	15	\$23.85	15%	35%	\$0.03	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,260.48	20	\$5,241.00	100%	at stock turnover	\$0.13	2	2	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	28,165.78	23	\$65,460.70	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	16,030.53	23	\$8,651.77	6%	at stock turnover	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,635.81	10	\$2,116.56	15%	45%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,902.84	15	\$1,219.71	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	415.56	15	\$358.74	15%	75%	\$0.09	0	0	BEST Simulation
Paper Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	13,732.44	15	\$7,056,406.86	15%	50%	\$51.28	0	0	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	12,134.34	12	\$22,394.32	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	Existing	3,591.95	15	\$34,932.26	20%	50%	\$0.18	0	0	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	27,202.48	23	\$58,965.77	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	11,240.24	18	\$14,753.16	15%	75%	\$0.10	0	0	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	782.85	18	\$1,336.30	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	Existing	4,879.65	10	\$10,403.45	18%	30%	\$0.10	0	0	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	8,264.67	45	\$146,392.64	15%	25%	\$0.16	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,241.19	20	\$2,672.61	15%	25%	\$0.08	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-120.60	45	\$19,416.78	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	22,071.35	23	\$67,164.14	4%	at stock turnover	\$0.32	0	0	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,252.95	3	\$4,762.27	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,497.74	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,116.61	10	\$4,681.55	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	25,161.11	23	\$13,090.51	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,105.65	10	\$2,044.82	15%	45%	\$0.04	0	0	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,220.66	4	\$1,327.34	15%	50%	\$0.03	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,613.91	15	\$1,748.86	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	389.57	15	\$349.77	15%	75%	\$0.09	0	0	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	20,646.68	23	\$49,651.45	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,111.93	23	\$218,053,548.58	6%	at stock turnover	\$20,412.63	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,806.91	10	\$1,865.45	15%	45%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,411.56	15	\$896.85	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$22,008.67	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	7,615.27	15	\$7,056,406.86	15%	50%	\$91.16	0	0	BEST Simulation
Paper Mfg	Cooling	De-stratification Fans (HVLS)	per Facility	New	6,743.39	12	\$14,448.24	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	New	2,001.78	15	\$28,645.35	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	20,003.84	23	\$44,725.09	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	7,177.39	18	\$10,672.50	15%	75%	\$0.11	0	0	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	652.74	18	\$269.05	15%	25%	\$0.31	0	0	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	New	2,626.08	10	\$6,026.82	18%	30%	\$0.10	0	0	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-111.76	45	\$111,119.57	15%	25%	\$0.14	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,106.90	20	\$520.17	15%	25%	\$0.28	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-32.81	45	\$2,573.96	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	New	12,626.88	23	\$39,705.41	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	New	1,793.89	3	\$4,260.03	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$4,017.88	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	New	156.26	32	\$14,851.82	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	15,228.06	23	\$9,938.72	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,586.42	10	\$1,237.65	15%	45%	\$0.04	0	0	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,182.35	4	\$807.16	15%	50%	\$0.04	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,440.83	15	\$1,147.97	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$37,084.70	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	143.69	15	\$34,932.26	20%	50%	\$0.18	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	477.47	5	\$89.68	15%	25%	\$0.03	0	0	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	185.94	10	\$206.28	33%	60%	\$0.11	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,501.64	10	\$1,425.99	15%	30%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	22.97	15	\$6.31	100%	at stock turnover	\$0.04	0	0	EIA 2011/Developed from RTF
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	136.70	3	\$4,762.27	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	46.93	10	\$4,681.55	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	New	125.73	15	\$28,645.35	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	415.50	5	\$89.68	15%	25%	\$0.03	0	0	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	169.19	10	\$125.56	44%	60%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,182.27	10	\$1,417.02	15%	30%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	118.95	3	\$4,260.03	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.22	32	\$14,851.82	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,043.97	23	\$40,380.59	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,394.32	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Heating	Energy Management System	per Facility	Existing	17,857.38	15	\$34,932.26	20%	50%	\$0.18	0	0	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,796.96	23	\$31,007.62	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	3,142.60	18	\$14,753.16	15%	75%	\$0.10	0	0	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,286.18	18	\$1,336.30	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	72,071.47	45	\$146,392.64	15%	25%	\$0.16	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,201.39	20	\$2,672.61	15%	25%	\$0.08	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	27,093.52	45	\$19,416.78	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	Existing	15,796.49	3	\$4,762.27	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,497.74	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	5,422.10	10	\$4,681.55	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,611.43	23	\$35,562.89	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,448.24	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	New	17,169.33	15	\$28,645.35	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,764.45	23	\$23,519.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,044.41	18	\$10,672.50	15%	75%	\$0.11	0	0	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-677.15	18	\$269.05	15%	25%	\$0.31	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	69,535.72	45	\$111,119.57	15%	25%	\$0.14	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,115.74	20	\$520.17	15%	25%	\$0.28	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,074.21	45	\$2,573.96	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	New	15,172.87	3	\$4,260.03	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$4,017.88	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,395.31	32	\$14,851.82	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	Existing	777.58	15	\$34,932.26	20%	50%	\$0.18	0	0	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	0	0	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,868.22	5	\$600.89	5%	40%	\$0.03	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,706.68	5	\$807.16	15%	50%	\$0.03	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,852.37	12	\$5,416.97	3%	25%	\$0.10	0	0	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	841.12	16	\$98.65	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,601.14	10	\$1,372.18	7%	60%	\$0.03	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$1,103,124.10	15%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,684.91	8	\$466.36	7%	15%	\$0.03	0	0	CA - DEER
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.52	5	\$26.91	10%	25%	\$0.01	0	0	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	707.06	3	\$4,762.27	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	242.75	10	\$4,681.55	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	New	731.42	15	\$28,645.35	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,283.96	5	\$600.89	5%	40%	\$0.04	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,179.28	5	\$807.16	15%	50%	\$0.04	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,556.55	12	\$5,094.10	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	760.98	16	\$98.65	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,068.45	10	\$1,417.02	22%	60%	\$0.03	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$1,103,124.10	18%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,574.52	8	\$457.39	7%	15%	\$0.03	0	0	CA - DEER
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.43	5	\$26.91	10%	25%	\$0.01	0	0	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	0	0	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	662.30	3	\$4,260.03	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.44	32	\$14,851.82	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$448.42	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,713.88	3	\$3,650.17	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,373.44	3	\$4,762.27	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	814.67	10	\$4,681.55	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$448.42	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	New	2,720.99	3	\$3,650.17	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,373.44	3	\$4,260.03	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	221.40	32	\$14,851.82	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	18,894.01	10	\$573.98	15%	75%	\$0.00	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	21,316.84	15	\$4,286.94	15%	50%	\$0.02	0	0	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	4,692.64	15	\$1,614.33	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	549.22	5	\$98.65	15%	50%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	8,917.48	20	\$6,941.61	15%	50%	\$0.07	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	4,699.09	15	\$1,623.30	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	9,901.21	10	\$3,614.30	15%	50%	\$0.05	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$6,726.37	15%	30%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	7,808.50	15	\$3,829.54	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	4,495.24	3	\$412.55	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	12,788.88	15	\$6,125.48	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,793.70	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	56,081.70	10	\$7,291.38	8%	38%	\$0.02	0	0	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	Existing	18,883.47	15	\$2,125.53	8%	38%	\$0.01	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	Existing	9,670.73	3	\$600.89	8%	38%	\$0.02	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	28,557.28	10	\$5,443.87	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,273.76	8	\$3,506.68	10%	50%	\$0.25	0	0	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,613.26	8	\$1,246.62	5%	25%	\$0.13	0	0	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$2,816.11	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	98,913.41	10	\$8,295.85	15%	29%	\$0.01	0	0	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	835.64	1	\$35.87	15%	52%	\$0.04	0	0	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	41,200.18	17	\$3,165.88	5%	6%	\$0.01	0	0	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	6,367.59	10	\$1,488.77	15%	36%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	40,616.08	17	\$8,798.09	25%	44%	\$0.02	1	1	RSMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$11,111.96	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	28,429.25	10	\$5,372.12	15%	29%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	34,350.48	10	\$6,582.87	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	Existing	34,697.68	15	\$8,017.83	8%	38%	\$0.03	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	17,935.96	3	\$2,278.00	8%	38%	\$0.05	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	55,718.30	12	\$22,277.73	8%	38%	\$0.05	0	0	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	Existing	15,557.12	3	\$3,650.17	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	Existing	13,744.49	3	\$4,762.27	0%	24%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$3,121.03	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	4,692.14	10	\$4,681.55	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,573.96	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	New	15,383.65	3	\$3,650.17	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	18,894.01	10	\$573.98	15%	75%	\$0.00	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	21,083.47	15	\$4,286.94	15%	50%	\$0.02	0	0	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	4,703.93	15	\$1,614.33	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	550.88	5	\$98.65	15%	50%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	8,971.80	20	\$6,941.61	15%	50%	\$0.07	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	4,711.83	15	\$1,623.30	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	9,951.33	10	\$3,614.30	15%	50%	\$0.05	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$6,726.37	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	New	8,041.61	15	\$3,829.54	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	4,503.66	3	\$412.55	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	12,689.41	15	\$6,125.48	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,793.70	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	55,032.92	10	\$7,291.38	8%	38%	\$0.02	0	0	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	New	18,879.43	15	\$2,125.53	8%	38%	\$0.01	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	New	9,376.47	3	\$600.89	8%	38%	\$0.02	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	27,921.76	10	\$5,443.87	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	2,243.45	8	\$3,506.68	10%	50%	\$0.25	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,591.80	8	\$1,246.62	5%	25%	\$0.13	0	0	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$2,816.11	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	98,892.23	10	\$8,295.85	15%	29%	\$0.01	0	0	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	818.50	1	\$35.87	15%	52%	\$0.04	0	0	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	41,211.87	17	\$3,165.88	5%	6%	\$0.01	0	0	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	6,293.86	10	\$1,488.77	15%	36%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	40,875.10	17	\$5,273.47	25%	44%	\$0.01	0	0	RSMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$11,111.96	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	27,947.49	10	\$5,372.12	15%	29%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	34,068.00	10	\$6,582.87	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	New	34,547.61	15	\$8,017.83	8%	38%	\$0.03	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	New	17,756.69	3	\$2,278.00	8%	38%	\$0.05	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	55,079.63	12	\$22,277.73	8%	38%	\$0.05	0	0	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	New	13,587.54	3	\$4,260.03	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$3,121.03	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	New	1,247.12	32	\$14,851.82	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,573.96	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$2,044.82	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$71.75	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$349.77	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$421.52	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$41,210.21	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$269.05	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$12,986.37	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,443.93	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$13,201.62	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$125.56	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$152.46	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$923.75	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$31,595.99	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	7,573.45	10	\$2,843.01	15%	25%	\$0.06	0	0	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	83.13	5	\$44.84	15%	38%	\$0.13	0	0	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$6,744.30	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	9,404.90	10	\$21,327.07	15%	40%	\$0.33	0	0	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	Existing	308.95	5	\$80.72	15%	75%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	3,064.13	10	\$1,695.04	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,453.71	5	\$2,062.75	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	956.36	15	\$457.39	15%	50%	\$0.06	0	0	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,822.80	18	\$1,103.12	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	649.36	3	\$62.78	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,874.38	15	\$923.75	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	Existing	561.35	3	\$3,650.17	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	Existing	2,209.72	3	\$4,762.27	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	Existing	758.48	10	\$4,681.55	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$2,044.82	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$71.75	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$349.77	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$421.52	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	New	561.88	3	\$3,650.17	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$41,210.21	0%	0%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$269.05	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$12,986.37	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,443.93	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$13,201.62	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$125.56	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$152.46	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$923.75	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$31,595.99	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	7,600.20	10	\$2,843.01	15%	25%	\$0.06	0	0	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	New	82.85	5	\$44.84	15%	38%	\$0.13	0	0	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$6,744.30	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	New	9,372.26	10	\$21,327.07	15%	40%	\$0.33	0	0	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	New	306.62	5	\$80.72	15%	75%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	3,054.82	10	\$1,695.04	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	New	1,436.50	5	\$2,062.75	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	950.99	15	\$457.39	15%	50%	\$0.06	0	0	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	New	1,828.76	18	\$1,103.12	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	New	649.36	3	\$62.78	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,877.35	15	\$923.75	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	New	2,209.80	3	\$4,260.03	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	New	194.15	32	\$14,851.82	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,394.32	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	469.97	3	\$4,762.27	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	161.33	10	\$4,681.55	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	172.67	15	\$35.87	15%	35%	\$0.02	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,437.61	20	\$6,013.19	100%	at stock turnover	\$0.11	0	0	BEST Simulation
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,448.24	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	New	166.62	3	\$4,260.03	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	15.66	32	\$14,851.82	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	61.26	15	\$17.94	15%	35%	\$0.03	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,025.96	20	\$3,722.36	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	39,104.65	23	\$90,883.97	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	22,256.39	23	\$12,011.90	6%	at stock turnover	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,582.88	10	\$2,941.27	15%	45%	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,659.50	15	\$1,699.59	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	580.81	15	\$499.68	15%	75%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	19,192.46	15	\$1,314,882.96	15%	50%	\$6.88	0	0	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	Existing	16,959.18	12	\$31,090.60	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	Existing	5,020.19	15	\$47,787.34	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	37,767.23	23	\$81,866.57	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	Existing	15,709.73	18	\$20,478.62	15%	75%	\$0.10	0	0	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,094.14	18	\$1,856.68	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	Existing	6,819.96	10	\$14,442.32	18%	30%	\$0.10	0	0	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	11,550.90	45	\$203,243.67	15%	25%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,132.36	20	\$3,708.34	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-168.55	45	\$26,962.79	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	Existing	30,643.30	23	\$93,248.98	4%	at stock turnover	\$0.32	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	Existing	4,591.10	3	\$1,565.89	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,790.87	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	Existing	1,560.62	10	\$7,403.32	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	34,933.05	23	\$18,174.52	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,848.16	10	\$2,842.67	15%	45%	\$0.04	0	0	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,165.40	4	\$1,848.32	15%	50%	\$0.03	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,653.23	15	\$2,421.54	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	544.47	15	\$487.98	15%	75%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	28,665.32	23	\$68,934.81	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,543.77	23	\$162,527,417.10	6%	at stock turnover	\$10,958.62	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	9,437.91	10	\$2,588.65	15%	45%	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,969.79	15	\$1,250.04	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$41,012.38	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	10,626.46	15	\$1,314,882.96	15%	50%	\$12.23	0	0	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	New	9,409.95	12	\$20,064.16	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	New	2,793.35	15	\$39,068.80	20%	50%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	27,772.82	23	\$62,095.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	New	10,015.48	18	\$14,813.32	15%	75%	\$0.11	0	0	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	910.84	18	\$372.67	15%	25%	\$0.31	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	New	3,664.56	10	\$8,367.59	18%	30%	\$0.10	0	0	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	New	-155.96	45	\$154,278.15	15%	25%	\$0.14	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	New	1,544.59	20	\$725.29	15%	25%	\$0.28	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-45.79	45	\$3,571.31	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	New	17,530.84	23	\$55,125.98	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	New	2,538.79	3	\$1,418.83	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$7,486.88	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	New	218.05	32	\$23,757.47	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	21,142.26	23	\$13,798.67	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,972.70	10	\$1,717.97	15%	45%	\$0.04	0	0	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,185.49	4	\$1,123.03	15%	50%	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,010.54	15	\$1,590.96	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$69,104.89	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$47,787.34	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$88.57	15%	25%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.90	33%	60%	\$0.11	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,427.19	15%	30%	\$0.06	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	22.97	15	\$6.31	100%	at stock turnover	\$0.04	0	0	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$1,565.89	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$7,403.32	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$39,068.80	20%	50%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.57	15%	25%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$128.68	44%	60%	\$0.06	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,420.50	15%	30%	\$0.06	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$1,418.83	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$23,757.47	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	8,391.30	23	\$56,063.38	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$31,090.60	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	Existing	24,958.85	15	\$47,787.34	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,883.22	23	\$43,050.20	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	Existing	4,392.32	18	\$20,478.62	15%	75%	\$0.10	0	0	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,797.67	18	\$1,856.68	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	Existing	100,732.89	45	\$203,243.67	15%	25%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,679.16	20	\$3,708.34	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	37,868.12	45	\$26,962.79	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	Existing	21,931.45	3	\$1,565.89	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,790.87	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	Existing	7,578.37	10	\$7,403.32	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	13,344.27	23	\$49,374.61	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$20,064.16	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	New	23,959.34	15	\$39,068.80	20%	50%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	9,391.59	23	\$32,653.22	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	New	2,852.92	18	\$14,813.32	15%	75%	\$0.11	0	0	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-944.94	18	\$372.67	15%	25%	\$0.31	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	New	97,035.57	45	\$154,278.15	15%	25%	\$0.14	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	New	-1,556.98	20	\$725.29	15%	25%	\$0.28	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,685.48	45	\$3,571.31	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	New	21,065.63	3	\$1,418.83	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$7,486.88	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	New	1,947.12	32	\$23,757.47	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$47,787.34	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	1	1	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,863.34	5	\$604.97	5%	40%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,700.38	5	\$805.51	15%	50%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.30	3%	25%	\$0.10	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	840.73	16	\$100.27	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.38	7%	60%	\$0.03	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$205,554.91	15%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$467.93	7%	15%	\$0.03	0	0	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.72	5	\$25.07	10%	25%	\$0.01	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	1	1	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.05	3	\$1,565.89	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$7,403.32	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$39,068.80	20%	50%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	0	1	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,280.99	5	\$603.30	5%	40%	\$0.04	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,175.13	5	\$805.51	15%	50%	\$0.04	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,095.42	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	759.99	16	\$98.60	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.82	22%	60%	\$0.03	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$205,554.91	18%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.23	7%	15%	\$0.03	0	0	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.14	5	\$25.07	10%	25%	\$0.01	0	0	AEG research & analysis
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	0	0	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	181.16	15	-\$59.01	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	New	732.80	3	\$1,418.83	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$23,757.47	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$835.59	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	Existing	1,993.91	3	\$9,111.26	5%	39%	\$0.09	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,732.17	3	\$1,565.89	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	598.55	10	\$7,403.32	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$835.59	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	New	1,995.98	3	\$9,111.26	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	New	1,732.17	3	\$1,418.83	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	New	161.95	32	\$23,757.47	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	66,930.29	10	\$2,037.17	15%	75%	\$0.00	2	2	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	75,381.21	15	\$15,182.65	15%	50%	\$0.02	1	1	OH - TRM
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	16,594.34	15	\$5,718.77	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,942.17	5	\$350.95	15%	50%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	31,970.11	20	\$24,574.67	15%	50%	\$0.07	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	16,617.14	15	\$5,762.22	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	35,307.74	10	\$12,791.20	15%	50%	\$0.05	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$12,533.84	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	Existing	28,503.06	15	\$13,553.25	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	Existing	15,896.26	3	\$1,445.57	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	44,946.59	15	\$21,685.21	8%	38%	\$0.05	0	1	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$3,342.36	15%	50%	\$10.00	0	0	VT - TRM

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Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	85,979.15	10	\$11,191.88	8%	38%	\$0.02	1	1	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	Existing	28,950.32	15	\$3,263.81	8%	38%	\$0.01	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	Existing	14,826.29	3	\$929.18	8%	38%	\$0.02	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	43,781.49	10	\$8,357.56	8%	38%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	4,195.98	8	\$6,499.21	10%	50%	\$0.25	0	0	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	2,977.10	8	\$2,304.55	5%	25%	\$0.13	0	0	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$5,255.86	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$8,792.07	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$33.42	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	75,967.83	17	\$5,862.49	5%	6%	\$0.01	0	0	E3T Website
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	11,750.56	10	\$2,754.10	15%	36%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	Existing	74,929.84	17	\$16,283.96	25%	44%	\$0.02	3	3	RSMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$11,781.81	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$5,695.38	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	71,319.01	10	\$13,683.61	8%	38%	\$0.03	1	1	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	Existing	72,039.82	15	\$16,683.37	8%	38%	\$0.03	1	1	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	Existing	37,553.83	3	\$4,746.15	8%	38%	\$0.05	0	0	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	116,733.65	12	\$46,341.77	8%	38%	\$0.05	1	1	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	Existing	28,729.10	3	\$9,111.26	5%	39%	\$0.09	2	2	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	Existing	26,320.85	3	\$1,565.89	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$3,305.59	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	Existing	8,645.46	10	\$7,403.32	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$4,411.91	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

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Petroleum Refining	Motors	Commissioning	per Facility	New	28,439.84	3	\$9,111.26	5%	39%	\$0.09	1	1	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	New	66,930.29	10	\$2,037.17	15%	75%	\$0.00	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	74,586.71	15	\$15,182.65	15%	50%	\$0.02	0	0	OH - TRM
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	16,543.46	15	\$5,718.77	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,948.83	5	\$350.95	15%	50%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	New	32,188.30	20	\$24,574.67	15%	50%	\$0.07	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	16,766.69	15	\$5,762.22	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	35,430.72	10	\$12,791.20	15%	50%	\$0.05	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$12,533.84	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	New	28,000.21	15	\$13,553.25	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	New	15,932.57	3	\$1,445.57	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	45,809.84	15	\$21,685.21	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$3,342.36	15%	50%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	84,406.16	10	\$11,191.88	8%	38%	\$0.02	0	0	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	New	28,956.06	15	\$3,263.81	8%	38%	\$0.01	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	New	14,381.10	3	\$929.18	8%	38%	\$0.02	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	New	42,824.86	10	\$8,357.56	8%	38%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	4,141.12	8	\$6,499.21	10%	50%	\$0.25	0	0	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2,938.25	8	\$2,304.55	5%	25%	\$0.13	0	0	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$5,255.86	0%	0%	\$10.00	0	0	OPA - TRM

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Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$8,792.07	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$33.42	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	76,009.24	17	\$5,862.49	5%	6%	\$0.01	0	0	E3T Website
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	11,650.75	10	\$2,754.10	15%	36%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	New	75,714.94	17	\$9,769.71	25%	44%	\$0.01	1	1	RSMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$11,781.81	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$5,695.38	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	70,761.71	10	\$13,683.61	8%	38%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	New	71,757.82	15	\$16,683.37	8%	38%	\$0.03	0	0	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	New	37,119.79	3	\$4,746.15	8%	38%	\$0.05	0	0	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	New	115,141.93	12	\$46,341.77	8%	38%	\$0.05	0	0	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	New	26,329.54	3	\$1,418.83	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$3,305.59	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	New	2,302.03	32	\$23,757.47	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$4,411.91	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$4,251.48	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$10.03	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$46.79	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$55.15	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$76,790.64	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$35.09	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,696.25	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$188.84	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,722.98	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$116.98	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$292.46	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	Existing	0.00	10	\$1,717.97	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$58,875.61	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$4,149.54	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$70.19	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$6,377.22	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$31,177.50	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	Existing	284.65	5	\$76.87	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,838.91	10	\$1,540.83	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	Existing	2,160.15	5	\$3,021.49	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	5,396.26	15	\$2,652.16	15%	50%	\$0.06	0	0	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	Existing	10,644.11	18	\$6,367.19	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	Existing	3,736.48	3	\$354.29	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	11,099.11	15	\$5,305.99	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	Existing	1,087.50	3	\$9,111.26	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Strategic Energy Management	per Facility	Existing	3,232.11	3	\$1,565.89	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	Existing	1,114.26	10	\$7,403.32	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$4,251.48	0%	0%	\$10.00	0	0	PA - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$10.03	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$46.79	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$55.15	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Commissioning	per Facility	New	1,089.64	3	\$9,111.26	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$76,790.64	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$35.09	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,696.25	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$188.84	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,722.98	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$116.98	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$292.46	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	New	0.00	10	\$1,717.97	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	New	0.00	10	\$58,875.61	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$4,149.54	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$70.19	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$6,377.22	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$31,177.50	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	New	284.95	5	\$76.87	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,838.93	10	\$1,540.83	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	New	2,153.32	5	\$3,021.49	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	5,558.56	15	\$2,652.16	15%	50%	\$0.06	0	0	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	New	10,688.79	18	\$6,367.19	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	New	3,738.02	3	\$354.29	15%	50%	\$0.04	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	10,973.03	15	\$5,305.99	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Strategic Energy Management	per Facility	New	3,232.11	3	\$1,418.83	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	New	291.02	32	\$23,757.47	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$31,090.60	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	Existing	653.37	3	\$1,565.89	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	Existing	225.47	10	\$7,403.32	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	239.32	15	\$51.81	15%	35%	\$0.02	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	7,549.44	20	\$8,348.57	100%	at stock turnover	\$0.11	0	0	BEST Simulation
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$20,064.16	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	New	231.78	3	\$1,418.83	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	New	21.86	32	\$23,757.47	15%	52%	\$0.42	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	84.93	15	\$23.40	15%	35%	\$0.03	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,201.16	20	\$5,168.03	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	31,948.70	23	\$74,252.68	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	18,183.58	23	\$9,813.78	6%	at stock turnover	\$0.06	2	2	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,661.38	10	\$2,403.46	15%	45%	\$0.04	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,176.62	15	\$1,388.12	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	475.35	15	\$407.81	15%	75%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	15,707.58	15	\$187,529.25	15%	50%	\$1.20	2	2	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,879.85	12	\$25,401.30	15%	50%	\$0.22	2	2	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	Existing	4,108.66	15	\$39,376.61	20%	50%	\$0.18	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	30,856.02	23	\$66,885.41	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	12,857.30	18	\$16,731.29	15%	75%	\$0.10	0	1	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	895.48	18	\$1,516.82	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	Existing	5,581.66	10	\$11,799.95	18%	30%	\$0.10	0	0	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	9,453.58	45	\$166,051.81	15%	25%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,563.62	20	\$3,030.07	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-137.95	45	\$22,028.97	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	Existing	25,035.73	23	\$76,184.90	4%	at stock turnover	\$0.32	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$398.03	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	Existing	1,277.26	10	\$4,394.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	28,540.48	23	\$14,848.68	3%	at stock turnover	\$0.05	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,060.01	10	\$2,322.43	15%	45%	\$0.04	0	0	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	11,593.38	4	\$1,509.91	15%	50%	\$0.03	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,989.90	15	\$1,978.73	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	445.61	15	\$398.03	15%	75%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	23,419.71	23	\$56,320.10	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,261.27	23	\$231,797.39	6%	at stock turnover	\$19.13	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,721.14	10	\$2,114.59	15%	45%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,611.48	15	\$1,020.83	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$5,849.21	15%	75%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	8,693.40	15	\$187,529.25	15%	50%	\$2.14	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	New	7,698.21	12	\$16,391.89	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	New	2,285.22	15	\$32,252.03	20%	50%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	22,690.54	23	\$50,732.09	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	New	8,193.57	18	\$12,102.41	15%	75%	\$0.11	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	745.15	18	\$304.84	15%	25%	\$0.31	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	New	2,997.96	10	\$6,836.43	18%	30%	\$0.10	0	0	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	-127.59	45	\$126,046.20	15%	25%	\$0.14	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	New	1,263.61	20	\$593.24	15%	25%	\$0.28	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-37.46	45	\$2,917.81	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	New	14,322.78	23	\$45,038.22	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,067.78	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	New	178.38	32	\$13,671.43	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	17,273.33	23	\$11,273.59	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,068.11	10	\$1,403.37	15%	45%	\$0.04	0	0	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,878.38	4	\$917.86	15%	50%	\$0.04	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,644.80	15	\$1,300.41	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$9,855.77	15%	75%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	Existing	144.87	15	\$39,376.61	20%	50%	\$0.18	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	477.47	5	\$89.14	15%	25%	\$0.03	0	0	Illinois TRM
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.47	10	\$208.79	33%	60%	\$0.11	0	0	1 AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,522.35	10	\$1,426.49	15%	30%	\$0.06	2	4	4 AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	10	10	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	5	5	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	7	14	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.61	15	-\$30.96	100%	at stock turnover	\$0.04	1	2	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.32	10	\$4,394.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	New	126.52	15	\$32,252.03	20%	50%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	415.50	5	\$88.66	15%	25%	\$0.03	0	0	Illinois TRM
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.25	10	\$127.99	44%	60%	\$0.06	0	0	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,196.01	10	\$1,419.58	15%	30%	\$0.06	1	1	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	4	5	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	2	3	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.28	32	\$13,671.43	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,855.73	23	\$45,804.07	2%	at stock turnover	\$0.13	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,401.30	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	Existing	20,427.22	15	\$39,376.61	20%	50%	\$0.18	3	3	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,172.61	23	\$35,172.23	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	Existing	3,594.83	18	\$16,731.29	15%	75%	\$0.10	0	0	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,471.28	18	\$1,516.82	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	82,443.50	45	\$166,051.81	15%	25%	\$0.16	4	4	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,374.29	20	\$3,030.07	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	30,992.66	45	\$22,028.97	45%	50%	\$0.06	1	1	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$398.03	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	Existing	6,202.42	10	\$4,394.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	10,902.34	23	\$40,339.32	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$16,391.89	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	New	19,601.11	15	\$32,252.03	20%	50%	\$0.16	1	1	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,672.98	23	\$26,677.85	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	New	2,333.97	18	\$12,102.41	15%	75%	\$0.11	0	0	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-773.05	18	\$304.84	15%	25%	\$0.31	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	New	79,384.77	45	\$126,046.20	15%	25%	\$0.14	1	1	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	New	-1,273.76	20	\$593.24	15%	25%	\$0.28	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,651.29	45	\$2,917.81	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,067.78	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	New	1,592.93	32	\$13,671.43	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	Existing	783.99	15	\$39,376.61	20%	50%	\$0.18	1	2	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	76	77	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,868.22	5	\$604.68	5%	40%	\$0.03	2	3	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,706.68	5	\$806.32	15%	50%	\$0.03	2	4	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,892.45	12	\$5,421.14	3%	25%	\$0.10	5	11	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	840.73	16	\$99.87	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,601.14	10	\$1,375.25	7%	60%	\$0.03	11	21	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$29,316.34	15%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,684.91	8	\$468.58	7%	15%	\$0.03	1	1	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.72	5	\$25.26	10%	25%	\$0.01	0	0	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	39	41	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	8	16	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	63.51	15	-\$19.85	100%	at stock turnover	\$0.04	1	2	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.75	10	\$4,394.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	New	736.00	15	\$32,252.03	20%	50%	\$0.16	0	1	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	34	39	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,283.96	5	\$604.20	5%	40%	\$0.04	0	1	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,179.28	5	\$805.37	15%	50%	\$0.04	1	1	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,585.15	12	\$5,096.28	4%	25%	\$0.09	2	2	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	760.98	16	\$99.39	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,068.45	10	\$1,413.86	22%	60%	\$0.03	2	3	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$29,316.34	18%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,574.52	8	\$456.19	7%	15%	\$0.03	0	0	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.43	5	\$25.03	10%	25%	\$0.01	0	0	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	18	20	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	4	7	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.81	32	\$13,671.43	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$119.17	0%	0%	\$10.00	0	0	MI - TRM
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	Existing	2,808.38	3	\$3,424.05	10%	40%	\$0.07	4	4	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	843.04	10	\$4,394.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$119.17	0%	0%	\$10.00	0	0	MI - TRM
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	New	2,810.14	3	\$3,424.05	10%	40%	\$0.07	1	1	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	228.30	32	\$13,671.43	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	4,372.27	10	\$133.00	15%	75%	\$0.00	7	7	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,932.94	15	\$991.75	15%	50%	\$0.02	4	5	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,085.93	15	\$373.72	15%	38%	\$0.04	1	1	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	127.10	5	\$22.88	15%	50%	\$0.04	0	0	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	2,135.60	20	\$1,605.25	15%	50%	\$0.07	2	2	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,087.42	15	\$376.35	15%	38%	\$0.04	1	1	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	Existing	1,860.14	15	\$885.45	8%	38%	\$0.05	1	2	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,040.25	3	\$94.38	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	3,046.84	15	\$1,416.72	8%	38%	\$0.05	2	3	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	36,049.72	10	\$4,684.66	8%	38%	\$0.02	28	29	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	Existing	12,138.43	15	\$1,366.43	8%	38%	\$0.01	10	10	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	Existing	6,216.42	3	\$388.74	8%	38%	\$0.02	5	5	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	18,356.82	10	\$3,497.70	8%	38%	\$0.03	14	15	6th Plan
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,394.15	8	\$2,092.90	10%	50%	\$0.25	7	7	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	989.17	8	\$741.97	5%	25%	\$0.13	3	3	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$749.59	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$438.32	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.67	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	24,632.61	17	\$1,887.69	5%	6%	\$0.01	3	3	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	3,844.70	10	\$886.88	15%	36%	\$0.03	10	11	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	24,409.29	17	\$5,243.57	25%	44%	\$0.02	61	61	RSMeans 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$587.28	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$283.87	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	8,448.77	10	\$1,618.12	8%	38%	\$0.03	7	7	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	Existing	8,534.17	15	\$1,973.01	8%	38%	\$0.03	7	7	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	Existing	4,448.79	3	\$561.30	8%	38%	\$0.05	3	4	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	13,820.19	12	\$5,480.25	8%	38%	\$0.05	11	11	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	Existing	9,537.47	3	\$3,424.05	10%	40%	\$0.07	37	38	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$164.70	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	Existing	2,869.95	10	\$4,394.11	15%	24%	\$0.05	3	4	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,819.14	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	New	9,451.79	3	\$3,424.05	10%	40%	\$0.07	12	12	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	4,372.27	10	\$133.00	15%	75%	\$0.00	2	2	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	4,878.94	15	\$991.75	15%	50%	\$0.02	1	1	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,088.54	15	\$373.72	15%	38%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	127.48	5	\$22.88	15%	50%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	2,147.34	20	\$1,605.25	15%	50%	\$0.07	1	1	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,090.37	15	\$376.35	15%	38%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	New	1,910.12	15	\$885.45	8%	38%	\$0.05	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	New	1,042.19	3	\$94.38	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	3,014.05	15	\$1,416.72	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	35,375.55	10	\$4,684.66	8%	38%	\$0.02	9	9	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	New	12,135.83	15	\$1,366.43	8%	38%	\$0.01	3	3	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	New	6,027.26	3	\$388.74	8%	38%	\$0.02	2	2	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	17,948.31	10	\$3,497.70	8%	38%	\$0.03	4	4	6th Plan
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,377.96	8	\$2,092.90	10%	50%	\$0.25	2	2	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	977.71	8	\$741.97	5%	25%	\$0.13	1	1	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$749.59	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$438.32	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.67	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	24,635.32	17	\$1,887.69	5%	6%	\$0.01	1	1	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	3,810.68	10	\$886.88	15%	36%	\$0.03	3	3	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	New	24,560.10	17	\$3,146.14	25%	44%	\$0.01	20	20	RSMeans 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$587.28	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$283.87	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	8,379.29	10	\$1,618.12	8%	38%	\$0.03	2	2	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	New	8,497.25	15	\$1,973.01	8%	38%	\$0.03	2	2	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	New	4,395.56	3	\$561.30	8%	38%	\$0.05	1	1	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	13,634.58	12	\$5,480.25	8%	38%	\$0.05	3	3	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$164.70	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	New	766.00	32	\$13,671.43	15%	52%	\$0.38	1	1	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,819.14	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$502.91	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$15.73	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$74.13	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$88.43	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$10,951.92	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$56.73	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,736.19	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$303.89	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,781.00	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$270.04	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$41.71	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$245.02	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$8,396.87	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$5,279.80	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$90.33	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$14,668.42	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$39,666.20	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	Existing	719.71	5	\$194.49	15%	75%	\$0.07	1	1	AEG study for State of New Mexico

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Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	7,129.85	10	\$3,888.82	15%	75%	\$0.08	11	11	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	Existing	2,802.02	5	\$3,843.30	15%	75%	\$0.33	22	22	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,251.54	15	\$614.21	15%	50%	\$0.06	1	1	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	Existing	2,468.66	18	\$1,474.16	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	Existing	866.60	3	\$81.99	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	2,574.20	15	\$1,228.43	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	Existing	1,028.00	3	\$3,424.05	10%	40%	\$0.07	20	4	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	Existing	1,422.83	10	\$4,394.11	15%	24%	\$0.05	2	2	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$502.91	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$15.73	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$74.13	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$88.43	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Commissioning	per Facility	New	1,028.88	3	\$3,424.05	10%	40%	\$0.07	6	3	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$10,951.92	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$56.73	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,736.19	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$303.89	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,781.00	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$270.04	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$41.71	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	New	0.00	10	\$245.02	0%	0%	\$10.00	0	0	OPA - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$8,396.87	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$5,279.80	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$90.33	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$14,668.42	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$39,666.20	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	New	720.16	5	\$194.49	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	7,108.51	10	\$3,888.82	15%	75%	\$0.08	4	4	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	New	2,791.59	5	\$3,843.30	15%	75%	\$0.33	7	7	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,288.66	15	\$614.21	15%	50%	\$0.06	0	0	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	New	2,478.00	18	\$1,474.16	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	New	866.60	3	\$81.99	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	2,543.91	15	\$1,228.43	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	New	377.28	32	\$13,671.43	15%	52%	\$0.38	1	1	6th Plan
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,401.30	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	184.53	10	\$4,394.11	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	195.87	15	\$41.71	15%	35%	\$0.02	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,167.93	20	\$6,820.82	100%	at stock turnover	\$0.11	2	2	BEST Simulation
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$16,391.89	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

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Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	New	17.88	32	\$13,671.43	15%	52%	\$0.38	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	69.48	15	\$19.31	15%	35%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,432.37	20	\$4,222.31	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	36,050.32	23	\$83,785.34	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	20,518.02	23	\$11,073.69	6%	at stock turnover	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,756.29	10	\$2,712.26	15%	45%	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,451.78	15	\$1,565.92	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	535.44	15	\$460.28	15%	75%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	17,693.41	15	\$762,418.20	15%	50%	\$4.33	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	15,634.56	12	\$28,662.39	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	4,628.08	15	\$44,197.58	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	34,817.36	23	\$75,472.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	14,482.70	18	\$18,879.25	15%	75%	\$0.10	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,008.68	18	\$1,711.27	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	6,287.28	10	\$13,315.19	18%	30%	\$0.10	0	0	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,648.70	45	\$187,369.99	15%	25%	\$0.16	0	0	BEST Simulation

Measure Data and Assumptions

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Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,887.71	20	\$3,418.67	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-155.39	45	\$24,857.08	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	28,249.86	23	\$85,965.63	4%	at stock turnover	\$0.32	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	4,232.51	3	\$721.91	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,618.25	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,438.72	10	\$3,343.09	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	32,204.55	23	\$16,754.98	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,078.95	10	\$2,620.21	15%	45%	\$0.04	0	0	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,058.99	4	\$1,703.52	15%	50%	\$0.03	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,367.89	15	\$2,232.60	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	501.94	15	\$449.62	15%	75%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	26,426.37	23	\$63,550.55	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,423.19	23	\$2,673,759.19	6%	at stock turnover	\$195.56	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,700.75	10	\$2,385.71	15%	45%	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,815.94	15	\$1,152.15	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$23,780.51	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	9,796.47	15	\$762,418.20	15%	50%	\$7.70	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	8,674.97	12	\$18,496.49	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	New	2,575.17	15	\$36,158.66	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	25,603.58	23	\$57,245.14	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	9,233.21	18	\$13,656.28	15%	75%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	839.70	18	\$344.00	15%	25%	\$0.31	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	3,378.34	10	\$7,714.30	18%	30%	\$0.10	0	0	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-143.78	45	\$142,228.59	15%	25%	\$0.14	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,423.94	20	\$669.59	15%	25%	\$0.28	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-42.21	45	\$3,292.70	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	16,161.56	23	\$50,820.29	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	2,340.50	3	\$587.22	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$4,341.17	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	201.02	32	\$9,824.81	15%	52%	\$0.34	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	19,490.91	23	\$12,720.90	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,584.30	10	\$1,583.36	15%	45%	\$0.04	0	0	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	6,624.25	4	\$1,035.87	15%	50%	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,853.50	15	\$1,467.08	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$40,069.59	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$44,197.58	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$89.15	15%	25%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$209.31	33%	60%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.38	15%	30%	\$0.06	0	1	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	1	1	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	1	1	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	1	2	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	22.97	15	\$6.31	100%	at stock turnover	\$0.04	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$721.91	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$3,343.09	15%	24%	\$0.04	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$36,158.66	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$89.15	15%	25%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$127.91	44%	60%	\$0.06	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,419.60	15%	30%	\$0.06	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	1	1	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	0	0	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	58.23	15	-\$0.12	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$587.22	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$9,824.81	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	7,735.88	23	\$51,684.46	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$28,662.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	Existing	23,009.40	15	\$44,197.58	20%	50%	\$0.18	1	1	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,579.92	23	\$39,687.70	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	4,049.25	18	\$18,879.25	15%	75%	\$0.10	0	0	AEG research & analysis
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,657.26	18	\$1,711.27	15%	25%	\$0.07	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	92,865.00	45	\$187,369.99	15%	25%	\$0.16	1	1	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,548.01	20	\$3,418.67	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	34,910.37	45	\$24,857.08	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	20,218.46	3	\$721.91	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,618.25	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	6,986.45	10	\$3,343.09	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	12,301.99	23	\$45,518.14	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$18,496.49	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	New	22,087.96	15	\$36,158.66	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	8,658.05	23	\$30,102.80	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,630.09	18	\$13,656.28	15%	75%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-871.14	18	\$344.00	15%	25%	\$0.31	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	89,456.46	45	\$142,228.59	15%	25%	\$0.14	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,435.37	20	\$669.59	15%	25%	\$0.28	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,241.40	45	\$3,292.70	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	19,420.27	3	\$587.22	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$4,341.17	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,795.03	32	\$9,824.81	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$44,197.58	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	11	11	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,863.34	5	\$604.66	5%	40%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,700.38	5	\$806.22	15%	50%	\$0.03	0	0	1 Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.62	3%	25%	\$0.10	1	2	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.81	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.03	7%	60%	\$0.03	2	3	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$119,188.41	15%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$469.00	7%	15%	\$0.03	0	0	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.19	5	\$25.19	10%	25%	\$0.01	0	0	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	6	6	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	1	2	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.96	3	\$721.91	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$3,343.09	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$36,158.66	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	5	6	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,381.35	5	\$603.69	5%	40%	\$0.04	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,074.77	5	\$805.25	15%	50%	\$0.04	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,096.03	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	759.99	16	\$99.81	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.79	22%	60%	\$0.03	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$119,188.41	18%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.40	7%	15%	\$0.03	0	0	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.14	5	\$25.19	10%	25%	\$0.01	0	0	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	3	3	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	1	1	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	60.26	15	-\$12.93	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	732.80	3	\$587.22	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$9,824.81	15%	52%	\$0.34	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$484.51	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,818.33	3	\$1,204.48	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,579.64	3	\$721.91	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	545.84	10	\$3,343.09	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$484.51	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	1,820.23	3	\$1,204.48	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,579.64	3	\$587.22	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	147.69	32	\$9,824.81	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	1,286.71	10	\$38.76	15%	75%	\$0.00	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	1,434.01	15	\$291.67	15%	50%	\$0.02	0	0	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	319.02	15	\$109.50	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	37.34	5	\$6.78	15%	50%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	614.62	20	\$472.88	15%	50%	\$0.07	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	319.46	15	\$110.47	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	678.37	10	\$246.13	15%	50%	\$0.05	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$7,267.59	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	534.98	15	\$260.66	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	305.60	3	\$28.10	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	876.21	15	\$416.67	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,938.02	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	5,718.87	10	\$744.20	8%	38%	\$0.02	1	1	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	1,925.62	15	\$217.06	8%	38%	\$0.01	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	975.85	3	\$62.02	8%	38%	\$0.02	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	2,912.11	10	\$556.21	8%	38%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	394.90	8	\$550.40	10%	50%	\$0.23	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	280.19	8	\$194.77	5%	25%	\$0.12	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$3,047.54	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$538.77	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.94	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	6,952.69	17	\$496.13	5%	6%	\$0.01	0	0	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,088.59	10	\$233.53	15%	36%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	6,904.76	17	\$1,377.93	25%	44%	\$0.02	2	2	RSMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$722.88	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$348.84	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$512.61	8%	38%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$625.01	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$177.33	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$1,736.47	8%	38%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	2,704.01	3	\$1,204.48	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	2,408.92	3	\$721.91	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$202.52	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	813.81	10	\$3,343.09	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$739.36	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	New	2,488.52	3	\$1,204.48	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	1,286.71	10	\$38.76	15%	75%	\$0.00	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	1,433.91	15	\$291.67	15%	50%	\$0.02	0	0	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	319.92	15	\$109.50	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	37.47	5	\$6.78	15%	50%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	618.81	20	\$472.88	15%	50%	\$0.07	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	320.46	15	\$110.47	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	681.14	10	\$246.13	15%	50%	\$0.05	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$7,267.59	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	538.30	15	\$260.66	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	306.30	3	\$28.10	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	880.68	15	\$416.67	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,938.02	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	5,614.24	10	\$744.20	8%	38%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	New	1,926.00	15	\$217.06	8%	38%	\$0.01	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	956.55	3	\$62.02	8%	38%	\$0.02	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	2,848.48	10	\$556.21	8%	38%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	362.35	8	\$550.40	10%	50%	\$0.25	0	0	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	257.10	8	\$194.77	5%	25%	\$0.13	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$3,047.54	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$538.77	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.94	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	6,465.62	17	\$496.13	5%	6%	\$0.01	0	0	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,004.77	10	\$233.53	15%	36%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	6,451.71	17	\$826.57	25%	44%	\$0.01	1	1	RSMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$722.88	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$348.84	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,650.91	10	\$512.61	8%	38%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	2,688.23	15	\$625.01	8%	38%	\$0.03	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,390.60	3	\$177.33	8%	38%	\$0.05	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	4,313.50	12	\$1,736.47	8%	38%	\$0.05	0	0	6th Plan
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	2,244.42	3	\$587.22	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$202.52	15%	25%	\$10.00	0	0	MT - IRP 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	201.43	32	\$9,824.81	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$739.36	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$158.92	0%	0%	\$10.00	0	0	PA - TRM
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$26.16	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$121.13	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$145.35	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$44,526.08	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$93.03	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$4,481.68	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$498.07	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$4,554.35	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$62.99	0%	0%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$169.58	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$996.14	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$34,138.27	0%	0%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,689.96	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$29.07	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,446.77	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$12,695.99	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	222.94	5	\$60.08	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,206.54	10	\$1,206.42	15%	75%	\$0.08	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	888.44	5	\$1,229.68	15%	75%	\$0.33	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,085.87	15	\$519.39	15%	50%	\$0.06	0	0	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	2,082.70	18	\$1,246.15	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	731.11	3	\$68.80	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	2,141.74	15	\$1,037.81	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	370.42	3	\$1,204.48	5%	39%	\$0.07	1	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	1,316.21	3	\$721.91	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	454.31	10	\$3,343.09	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$158.92	0%	0%	\$10.00	0	0	PA - TRM
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$26.16	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$121.13	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$145.35	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	New	465.53	3	\$1,204.48	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$44,526.08	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$93.03	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$4,481.68	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$498.07	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$4,554.35	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$62.99	0%	0%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$169.58	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$996.14	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$34,138.27	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,689.96	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$29.07	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,446.77	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$12,695.99	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	223.17	5	\$60.08	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,200.07	10	\$1,206.42	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	972.12	5	\$1,229.68	15%	75%	\$0.30	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,087.63	15	\$519.39	15%	50%	\$0.06	0	0	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	2,091.44	18	\$1,246.15	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	731.41	3	\$68.80	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	2,147.06	15	\$1,037.81	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	New	1,446.91	3	\$587.22	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	131.38	32	\$9,824.81	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$28,662.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	602.34	3	\$721.91	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	207.86	10	\$3,343.09	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	220.63	15	\$47.48	15%	35%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,959.78	20	\$7,696.49	100%	at stock turnover	\$0.11	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$18,496.49	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	213.68	3	\$587.22	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	20.15	32	\$9,824.81	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	78.30	15	\$21.32	15%	35%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,873.02	20	\$4,764.37	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	28,165.78	23	\$65,460.70	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	16,030.53	23	\$8,651.77	6%	at stock turnover	\$0.06	1	1	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,622.49	10	\$2,118.97	15%	45%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,915.55	15	\$1,223.63	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	418.34	15	\$359.55	15%	75%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	13,823.69	15	\$142,229.03	15%	50%	\$1.03	1	1	BEST Simulation
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	Existing	12,215.13	12	\$22,393.66	15%	50%	\$0.22	1	1	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	Existing	3,615.87	15	\$34,930.53	20%	50%	\$0.18	0	0	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	27,202.48	23	\$58,965.77	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	Existing	11,315.19	18	\$14,750.21	15%	75%	\$0.10	0	0	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	788.07	18	\$1,337.15	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	Existing	4,912.19	10	\$10,402.89	18%	30%	\$0.10	0	0	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	8,319.73	45	\$146,390.15	15%	25%	\$0.16	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,256.14	20	\$2,671.22	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-121.40	45	\$19,420.55	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	RTU - EER 12.0	per Facility	Existing	22,071.35	23	\$67,164.14	4%	at stock turnover	\$0.32	0	0	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	Existing	3,306.82	3	\$1,050.27	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$377.45	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	Existing	1,124.06	10	\$4,958.67	15%	24%	\$0.05	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	25,161.11	23	\$13,090.51	3%	at stock turnover	\$0.05	1	1	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,093.30	10	\$2,047.39	15%	45%	\$0.04	0	0	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,202.86	4	\$1,331.18	15%	50%	\$0.03	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,631.30	15	\$1,744.42	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	392.16	15	\$350.87	15%	75%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	20,646.68	23	\$49,651.45	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,111.93	23	\$703,214.42	6%	at stock turnover	\$65.83	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,797.81	10	\$1,864.09	15%	45%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,418.77	15	\$900.05	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$5,545.27	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	7,653.89	15	\$142,229.03	15%	50%	\$1.84	0	0	BEST Simulation
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	New	6,777.68	12	\$14,451.03	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	New	2,011.96	15	\$28,648.63	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	20,003.84	23	\$44,725.09	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	New	7,213.82	18	\$10,669.53	15%	75%	\$0.11	0	0	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	656.05	18	\$268.62	15%	25%	\$0.31	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	New	2,639.46	10	\$6,027.02	18%	30%	\$0.10	0	0	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	New	-112.33	45	\$111,121.58	15%	25%	\$0.14	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	New	1,112.51	20	\$522.96	15%	25%	\$0.28	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-32.98	45	\$2,572.34	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	RTU - EER 12.0	per Facility	New	12,626.88	23	\$39,705.41	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	New	1,828.61	3	\$944.70	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,012.31	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	New	157.05	32	\$15,814.39	15%	52%	\$0.62	0	0	6th Plan
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	15,228.06	23	\$9,938.72	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,581.67	10	\$1,237.18	15%	45%	\$0.04	0	0	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,175.47	4	\$809.12	15%	50%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,448.12	15	\$1,146.44	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$9,343.77	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$34,930.53	20%	50%	\$0.18	0	0	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$89.12	15%	25%	\$0.03	0	0	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.79	33%	60%	\$0.11	0	0	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.45	15%	30%	\$0.06	1	2	AEG research & analysis
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	7	7	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	3	3	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	5	9	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	23.99	15	\$6.20	100%	at stock turnover	\$0.04	1	1	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$1,050.27	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$4,958.67	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$28,648.63	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.76	15%	25%	\$0.03	0	0	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$127.98	44%	60%	\$0.06	0	0	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,419.76	15%	30%	\$0.06	0	1	AEG research & analysis
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	3	3	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	1	2	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	2	4	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$944.70	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$15,814.39	15%	52%	\$0.62	0	0	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,043.97	23	\$40,380.59	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,393.66	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	Existing	17,977.03	15	\$34,930.53	20%	50%	\$0.18	2	2	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,796.96	23	\$31,007.62	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	Existing	3,163.64	18	\$14,750.21	15%	75%	\$0.10	0	0	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,294.80	18	\$1,337.15	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	Existing	72,554.55	45	\$146,390.15	15%	25%	\$0.16	2	2	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,209.44	20	\$2,671.22	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	27,275.14	45	\$19,420.55	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	Existing	15,796.49	3	\$1,050.27	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$377.45	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Heating	Transformer - High Efficiency	per Facility	Existing	5,458.45	10	\$4,958.67	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,611.43	23	\$35,562.89	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,451.03	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	New	17,257.12	15	\$28,648.63	20%	50%	\$0.16	1	1	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,764.45	23	\$23,519.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	New	2,054.86	18	\$10,669.53	15%	75%	\$0.11	0	0	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-680.61	18	\$268.62	15%	25%	\$0.31	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	New	69,891.49	45	\$111,121.58	15%	25%	\$0.14	1	1	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	New	-1,121.44	20	\$522.96	15%	25%	\$0.28	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,095.06	45	\$2,572.34	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	New	15,172.87	3	\$944.70	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,012.31	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Heating	Transformer - High Efficiency	per Facility	New	1,402.44	32	\$15,814.39	15%	52%	\$0.62	0	0	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$34,930.53	20%	50%	\$0.18	1	1	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	50	51	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,745.93	5	\$604.67	5%	40%	\$0.03	1	2	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,817.78	5	\$806.23	15%	50%	\$0.03	1	3	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.08	3%	25%	\$0.10	4	7	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.78	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.29	7%	60%	\$0.03	8	14	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$22,234.58	15%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$468.55	7%	15%	\$0.03	0	1	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.72	5	\$25.31	10%	25%	\$0.01	0	0	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	26	27	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	5	10	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	36.99	15	\$8.09	100%	at stock turnover	\$0.04	1	2	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.59	3	\$1,050.27	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$4,958.67	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$28,648.63	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	23	26	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,381.35	5	\$604.13	5%	40%	\$0.04	0	0	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,074.77	5	\$805.51	15%	50%	\$0.04	0	1	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,096.24	4%	25%	\$0.09	1	2	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	760.98	16	\$99.42	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.79	22%	60%	\$0.03	1	2	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$22,234.58	18%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.08	7%	15%	\$0.03	0	0	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.43	5	\$25.13	10%	25%	\$0.01	0	0	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	12	13	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	2	5	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	New	732.11	3	\$944.70	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$15,814.39	15%	52%	\$0.62	0	0	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$112.98	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	Existing	2,732.07	3	\$5,702.72	5%	39%	\$0.08	3	3	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,373.44	3	\$1,050.27	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	820.14	10	\$4,958.67	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$112.98	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	New	2,734.92	3	\$5,702.72	5%	39%	\$0.28	1	1	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	New	2,373.44	3	\$944.70	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	New	221.91	32	\$15,814.39	15%	52%	\$0.62	0	0	6th Plan
Wastewater	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,756.24	10	\$114.43	15%	75%	\$0.00	4	4	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,230.52	15	\$852.14	15%	50%	\$0.02	3	3	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	931.30	15	\$321.05	15%	38%	\$0.04	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	109.00	5	\$19.70	15%	50%	\$0.04	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,794.22	20	\$1,379.09	15%	50%	\$0.07	1	1	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	932.58	15	\$323.40	15%	38%	\$0.04	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,981.53	10	\$717.83	15%	50%	\$0.05	1	1	VT - TRM
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,694.71	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	Existing	1,562.69	15	\$760.68	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	Existing	892.12	3	\$81.17	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,559.42	15	\$1,216.94	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$451.92	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	260,121.11	10	\$33,861.28	8%	38%	\$0.02	135	136	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	Existing	87,586.24	15	\$9,876.31	8%	38%	\$0.01	46	46	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	Existing	44,855.41	3	\$2,809.15	8%	38%	\$0.02	23	23	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	132,456.40	10	\$25,283.07	8%	38%	\$0.03	66	69	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,476.96	8	\$3,854.54	10%	50%	\$0.25	8	9	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,757.43	8	\$1,366.61	5%	25%	\$0.13	3	3	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$710.60	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,468.93	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$5.60	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	45,410.41	17	\$3,476.73	5%	6%	\$0.01	4	4	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	6,854.04	10	\$1,633.43	15%	36%	\$0.03	12	13	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	Existing	43,972.54	17	\$9,657.58	25%	44%	\$0.02	71	73	RSMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,968.39	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$951.57	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	34,846.09	10	\$6,685.74	8%	38%	\$0.03	18	18	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Pumping System - Controls	per Facility	Existing	35,198.27	15	\$8,151.23	8%	38%	\$0.03	18	18	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	Existing	18,348.60	3	\$2,318.54	8%	38%	\$0.05	9	10	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	57,000.06	12	\$22,642.40	8%	38%	\$0.05	29	30	6th Plan
Wastewater	Motors	Retrocommissioning	per Facility	Existing	16,958.67	3	\$5,702.72	5%	39%	\$0.08	47	50	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	Existing	15,733.50	3	\$1,050.27	0%	5%	\$0.01	7	7	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$552.25	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	Existing	5,114.57	10	\$4,958.67	15%	24%	\$0.05	4	4	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$470.36	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Commissioning	per Facility	New	1,723.57	3	\$5,702.72	5%	39%	\$0.28	0	0	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$114.43	15%	75%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$852.14	15%	50%	\$10.00	0	0	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$321.05	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$19.70	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,379.09	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$323.40	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$717.83	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,694.71	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$760.68	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$81.17	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$1,216.94	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$451.92	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$33,861.28	8%	38%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Fan System - Controls	per Facility	New	0.00	15	\$9,876.31	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$2,809.15	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$25,283.07	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	250.07	8	\$3,854.54	10%	50%	\$2.60	0	0	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	177.44	8	\$1,366.61	5%	25%	\$1.30	0	0	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$710.60	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,468.93	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$5.60	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,376.42	17	\$3,476.73	5%	6%	\$0.09	0	0	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	682.20	10	\$1,633.43	15%	36%	\$0.35	0	0	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	New	4,373.04	17	\$5,794.55	25%	44%	\$0.15	0	0	RSMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,968.39	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$951.57	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$6,685.74	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$8,151.23	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$2,318.54	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$22,642.40	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	New	1,519.19	3	\$944.70	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$552.25	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	New	139.49	32	\$15,814.39	15%	52%	\$0.62	0	0	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$470.36	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$2,077.58	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$142.08	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$669.03	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$798.10	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$10,383.01	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$511.40	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$24,664.66	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,738.65	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$25,067.41	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$41.94	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$39.41	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	Existing	0.00	10	\$232.29	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$7,960.70	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,469.50	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$59.29	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,275.70	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$26,064.72	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	Existing	924.71	5	\$250.18	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	9,222.38	10	\$5,005.31	15%	75%	\$0.08	10	10	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	Existing	2,672.48	5	\$2,525.34	15%	75%	\$0.22	3	3	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,552.81	15%	50%	\$10.00	0	0	Developed from RTF
Wastewater	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$3,726.73	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$206.98	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$3,105.61	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	Existing	4,487.86	3	\$5,702.72	5%	39%	\$0.08	3	3	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	Existing	4,016.64	3	\$1,050.27	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	Existing	1,387.94	10	\$4,958.67	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$2,077.58	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$142.08	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$669.03	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$798.10	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Process	Commissioning	per Facility	New	818.35	3	\$5,702.72	5%	39%	\$0.28	4	2	Energy Management Program Design for PC
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$10,383.01	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$511.40	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$24,664.66	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,738.65	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$25,067.41	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$41.94	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$39.41	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	New	0.00	10	\$232.29	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	New	0.00	10	\$7,960.70	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,469.50	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$59.29	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,275.70	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$26,064.72	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	New	925.68	5	\$250.18	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	9,222.46	10	\$5,005.31	15%	75%	\$0.08	3	3	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	New	1,796.41	5	\$2,525.34	15%	75%	\$0.33	3	3	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	3,169.19	15	\$1,552.81	15%	50%	\$0.06	1	1	Developed from RTF
Wastewater	Process	Refrigeration - System Controls	per Facility	New	6,256.35	18	\$3,726.73	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Maintenance	per Facility	New	2,187.93	3	\$206.98	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	6,507.06	15	\$3,105.61	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	New	2,702.08	3	\$944.70	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	New	242.79	32	\$15,814.39	15%	52%	\$0.62	0	0	6th Plan
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,393.66	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	Existing	470.60	3	\$1,050.27	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	Existing	162.40	10	\$4,958.67	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	172.37	15	\$36.88	15%	35%	\$0.02	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,437.61	20	\$6,013.19	100%	at stock turnover	\$0.11	1	1	BEST Simulation
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,451.03	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	New	166.95	3	\$944.70	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	New	15.74	32	\$15,814.39	15%	52%	\$0.62	0	0	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	61.17	15	\$16.99	15%	35%	\$0.03	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,025.96	20	\$3,722.36	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	28,165.78	23	\$65,460.70	2%	at stock turnover	\$0.13	2	2	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	16,030.53	23	\$8,651.77	6%	at stock turnover	\$0.06	2	2	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,622.49	10	\$2,118.83	15%	45%	\$0.04	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,915.55	15	\$1,223.70	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	418.34	15	\$359.48	15%	75%	\$0.09	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	13,823.69	15	\$170,076.70	15%	50%	\$1.24	2	3	BEST Simulation
Water	Cooling	Destratification Fans (HVLS)	per Facility	Existing	12,215.13	12	\$22,393.79	15%	50%	\$0.22	2	3	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	Existing	3,615.87	15	\$34,930.57	20%	50%	\$0.18	1	1	BEST Simulation
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	27,202.48	23	\$58,965.77	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	Existing	11,315.19	18	\$14,750.07	15%	75%	\$0.10	1	1	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	788.07	18	\$1,337.18	15%	25%	\$0.07	0	0	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	Existing	4,912.19	10	\$10,402.82	18%	30%	\$0.10	0	0	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	8,319.73	45	\$146,390.25	15%	25%	\$0.16	0	0	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,256.14	20	\$2,671.12	15%	25%	\$0.07	0	0	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-121.40	45	\$19,420.48	45%	50%	\$0.06	0	0	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	Existing	22,071.35	23	\$67,164.14	4%	at stock turnover	\$0.32	0	0	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	Existing	3,306.82	3	\$1,064.60	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$451.35	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	Existing	1,124.06	10	\$5,027.94	15%	24%	\$0.05	0	0	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	25,161.11	23	\$13,090.51	3%	at stock turnover	\$0.05	2	2	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,093.30	10	\$2,047.49	15%	45%	\$0.04	0	0	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,202.86	4	\$1,331.13	15%	50%	\$0.03	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,631.30	15	\$1,744.43	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	392.16	15	\$350.83	15%	75%	\$0.09	0	0	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	20,646.68	23	\$49,651.45	2%	at stock turnover	\$0.13	1	1	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,111.93	23	\$129,403.69	6%	at stock turnover	\$12.11	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,797.81	10	\$1,864.19	15%	45%	\$0.04	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,418.77	15	\$900.10	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$6,631.00	15%	75%	\$10.00	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,653.89	15	\$170,076.70	15%	50%	\$2.20	0	0	BEST Simulation
Water	Cooling	Destratification Fans (HVLS)	per Facility	New	6,777.68	12	\$14,451.12	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	New	2,011.96	15	\$28,648.46	20%	50%	\$0.16	0	0	BEST Simulation
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	20,003.84	23	\$44,725.09	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	New	7,213.82	18	\$10,669.35	15%	75%	\$0.11	0	0	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	656.05	18	\$268.69	15%	25%	\$0.31	0	0	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	New	2,639.46	10	\$6,027.04	18%	30%	\$0.10	0	0	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	New	-112.33	45	\$111,121.60	15%	25%	\$0.14	0	0	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	New	1,112.51	20	\$522.90	15%	25%	\$0.28	0	0	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-32.98	45	\$2,572.33	45%	50%	\$0.06	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Cooling	RTU - EER 12.0	per Facility	New	12,626.88	23	\$39,705.41	4%	at stock turnover	\$0.33	0	0	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	New	1,828.61	3	\$959.11	0%	5%	\$0.02	0	0	BEST Simulation
Water	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,210.51	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	New	157.05	32	\$16,054.83	15%	52%	\$0.67	0	0	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	15,228.06	23	\$9,938.72	3%	at stock turnover	\$0.07	1	1	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,581.67	10	\$1,237.10	15%	45%	\$0.04	0	0	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,175.47	4	\$809.10	15%	50%	\$0.04	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,448.12	15	\$1,146.31	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$11,173.23	15%	75%	\$10.00	0	0	BEST Simulation
Water	Exterior Lighting	Energy Management System	per Facility	Existing	144.62	15	\$34,930.57	20%	50%	\$0.18	0	0	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	476.65	5	\$89.06	15%	25%	\$0.03	0	1	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	187.15	10	\$208.81	33%	60%	\$0.11	0	1	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,518.04	10	\$1,426.46	15%	30%	\$0.06	3	5	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	380.41	15	\$78.68	100%	at stock turnover	\$0.00	14	14	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.19	15	\$15.96	100%	at stock turnover	\$0.00	7	7	AEO 2013
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	34.43	15	\$13.52	100%	at stock turnover	\$0.03	10	20	EIA 2011/Developed from RTF
Water	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	22.97	15	\$6.31	100%	at stock turnover	\$0.04	1	3	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	Existing	137.94	3	\$1,064.60	0%	5%	\$0.01	0	0	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	47.24	10	\$5,027.94	15%	24%	\$0.05	0	0	6th Plan
Water	Exterior Lighting	Energy Management System	per Facility	New	126.36	15	\$28,648.46	20%	50%	\$0.16	0	0	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	414.96	5	\$88.63	15%	25%	\$0.03	0	0	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	170.03	10	\$127.97	44%	60%	\$0.06	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,193.15	10	\$1,419.76	15%	30%	\$0.06	1	1	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	380.41	15	\$78.68	100%	at stock turnover	\$0.01	6	7	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.19	15	\$15.96	100%	at stock turnover	\$0.02	3	4	AEO 2013
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	34.43	15	\$13.52	100%	at stock turnover	\$0.03	5	9	EIA 2011/Developed from RTF
Water	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	22.97	15	\$6.31	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	New	120.03	3	\$959.11	0%	5%	\$0.02	0	0	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	New	10.27	32	\$16,054.83	15%	52%	\$0.67	0	0	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,043.97	23	\$40,380.59	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Water	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,393.79	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	Existing	17,977.03	15	\$34,930.57	20%	50%	\$0.18	4	4	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,796.96	23	\$31,007.62	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	Existing	3,163.64	18	\$14,750.07	15%	75%	\$0.10	0	0	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,294.80	18	\$1,337.18	15%	25%	\$0.07	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	Existing	72,554.55	45	\$146,390.25	15%	25%	\$0.16	5	5	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,209.44	20	\$2,671.12	15%	25%	\$0.07	0	0	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	27,275.14	45	\$19,420.48	45%	50%	\$0.06	1	1	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	Existing	15,796.49	3	\$1,064.60	0%	5%	\$0.01	1	1	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$451.35	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	Existing	5,458.45	10	\$5,027.94	15%	24%	\$0.05	0	0	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,611.43	23	\$35,562.89	2%	at stock turnover	\$0.13	0	0	BEST Simulation
Water	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,451.12	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	New	17,257.12	15	\$28,648.46	20%	50%	\$0.16	1	1	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,764.45	23	\$23,519.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	New	2,054.86	18	\$10,669.35	15%	75%	\$0.11	0	0	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-680.61	18	\$268.69	15%	25%	\$0.31	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	New	69,891.49	45	\$111,121.60	15%	25%	\$0.14	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Heating	Insulation - Ducting - R-8	per Facility	New	-1,121.44	20	\$522.90	15%	25%	\$0.28	0	0	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,095.06	45	\$2,572.33	45%	50%	\$0.06	0	0	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	New	15,172.87	3	\$959.11	0%	5%	\$0.02	0	0	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,210.51	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	New	1,402.44	32	\$16,054.83	15%	52%	\$0.67	0	0	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	Existing	782.65	15	\$34,930.57	20%	50%	\$0.18	2	3	BEST Simulation
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	708.88	15	\$146.61	100%	at stock turnover	\$0.00	107	109	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,863.34	5	\$604.61	5%	40%	\$0.03	2	5	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,700.38	5	\$806.29	15%	50%	\$0.03	3	6	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,884.10	12	\$5,421.14	3%	25%	\$0.10	8	15	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	839.28	16	\$99.87	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,591.50	10	\$1,375.23	7%	60%	\$0.03	16	29	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$26,587.99	15%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,682.03	8	\$468.42	7%	15%	\$0.03	1	2	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	322.19	5	\$25.29	10%	25%	\$0.01	0	0	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	34.54	15	\$22.78	100%	at stock turnover	\$0.01	55	58	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.68	15	\$21.08	100%	at stock turnover	\$0.03	11	22	EIA 2011/Developed from RTF
Water	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	35.81	15	\$9.83	100%	at stock turnover	\$0.04	1	3	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	Existing	809.96	3	\$1,064.60	0%	5%	\$0.01	0	1	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	244.33	10	\$5,027.94	15%	24%	\$0.05	0	0	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	New	735.05	15	\$28,648.46	20%	50%	\$0.16	1	1	BEST Simulation
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	708.88	15	\$146.61	100%	at stock turnover	\$0.01	48	55	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,280.99	5	\$604.17	5%	40%	\$0.04	1	1	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,175.13	5	\$805.42	15%	50%	\$0.04	1	1	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,579.19	12	\$5,096.25	4%	25%	\$0.09	2	3	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	760.98	16	\$99.43	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	5,061.81	10	\$1,413.70	22%	60%	\$0.03	3	4	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$26,587.99	18%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,572.47	8	\$456.10	7%	15%	\$0.03	0	0	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	226.43	5	\$25.07	10%	25%	\$0.01	0	0	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	34.54	15	\$22.78	100%	at stock turnover	\$0.02	25	28	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.68	15	\$21.08	100%	at stock turnover	\$0.03	5	10	EIA 2011/Developed from RTF
Water	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	35.81	15	\$9.83	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	New	732.11	3	\$959.11	0%	5%	\$0.02	0	0	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	New	59.73	32	\$16,054.83	15%	52%	\$0.67	0	0	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$135.10	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	Existing	2,732.07	3	\$5,838.98	5%	39%	\$0.07	7	7	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,373.44	3	\$1,064.60	0%	5%	\$0.01	1	1	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	820.14	10	\$5,027.94	15%	24%	\$0.05	1	1	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$135.10	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	New	2,734.92	3	\$5,838.98	5%	39%	\$0.36	2	2	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	New	2,373.44	3	\$959.11	0%	5%	\$0.02	0	0	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	New	221.91	32	\$16,054.83	15%	52%	\$0.67	0	0	6th Plan
Water	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,756.24	10	\$114.35	15%	75%	\$0.00	8	8	MI - TRM
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,186.23	15	\$852.11	15%	50%	\$0.02	5	6	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	931.30	15	\$321.00	15%	38%	\$0.04	1	1	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	109.00	5	\$19.67	15%	50%	\$0.04	0	0	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,794.22	20	\$1,379.12	15%	50%	\$0.07	2	2	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	932.58	15	\$323.38	15%	38%	\$0.04	1	1	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,980.32	10	\$717.88	15%	50%	\$0.05	2	3	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,026.52	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	Existing	1,561.75	15	\$760.68	8%	38%	\$0.05	2	2	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Maintenance	per Facility	Existing	889.70	3	\$81.06	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,557.87	15	\$1,217.00	8%	38%	\$0.05	3	3	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$540.41	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$1,584.47	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	Existing	0.00	15	\$462.16	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	Existing	0.00	3	\$131.43	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	0.00	10	\$1,183.06	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	3,129.81	8	\$3,970.69	10%	50%	\$0.21	18	19	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	2,220.64	8	\$1,407.65	5%	25%	\$0.10	6	7	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$849.73	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$35.02	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$0.22	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	56,763.02	17	\$3,581.38	5%	6%	\$0.01	8	8	E3T Website
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	8,791.84	10	\$1,682.61	15%	36%	\$0.03	27	28	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	Existing	56,632.11	17	\$9,948.45	25%	44%	\$0.02	160	160	RSMeans 2013
Water	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$46.91	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$22.70	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	125,882.25	10	\$24,152.49	8%	38%	\$0.03	137	140	6th Plan
Water	Motors	Pumping System - Controls	per Facility	Existing	127,154.52	15	\$29,446.74	8%	38%	\$0.03	140	142	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	Existing	66,243.55	3	\$8,375.87	8%	38%	\$0.05	72	74	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	205,913.98	12	\$81,796.56	8%	38%	\$0.05	221	229	6th Plan
Water	Motors	Retrocommissioning	per Facility	Existing	21,429.06	3	\$5,838.98	5%	39%	\$0.07	103	108	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	Existing	19,666.87	3	\$1,064.60	0%	5%	\$0.01	15	15	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$13.19	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	Existing	6,574.00	10	\$5,027.94	15%	24%	\$0.05	9	9	6th Plan
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$313.44	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Commissioning	per Facility	New	41.68	3	\$5,838.98	5%	39%	\$0.36	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$114.35	15%	75%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$852.11	15%	50%	\$10.00	0	0	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$321.00	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$19.67	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,379.12	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$323.38	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$717.88	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,026.52	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$760.68	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$81.06	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$1,217.00	8%	38%	\$10.00	0	0	AEG study for State of New Mexico

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Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$540.41	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$1,584.47	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	New	0.00	15	\$462.16	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$131.43	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$1,183.06	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	5.95	8	\$3,970.69	10%	50%	\$112.54	0	0	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	4.22	8	\$1,407.65	5%	25%	\$56.27	0	0	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$849.73	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$35.02	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$0.22	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	103.01	17	\$3,581.38	5%	6%	\$3.85	0	0	E3T Website
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	16.23	10	\$1,682.61	15%	36%	\$15.06	0	0	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	New	102.93	17	\$5,969.11	25%	44%	\$6.43	0	0	RSMeans 2013
Water	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$46.91	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$22.70	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$24,152.49	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$29,446.74	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$8,375.87	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$81,796.56	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	New	36.17	3	\$959.11	0%	5%	\$0.02	0	0	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$13.19	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	New	3.38	32	\$16,054.83	15%	52%	\$0.67	0	0	6th Plan
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$313.44	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$7,505.60	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$142.02	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

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Water	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$669.02	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$798.07	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$12,415.94	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$511.22	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$24,664.58	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,738.56	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$25,067.51	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$41.94	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$47.12	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	Existing	0.00	10	\$277.77	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$9,519.37	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,469.41	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$59.44	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,275.54	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$26,064.66	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	Existing	924.71	5	\$250.32	15%	75%	\$0.07	2	2	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	9,152.49	10	\$5,005.24	15%	75%	\$0.08	20	20	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	Existing	2,672.48	5	\$2,525.43	15%	75%	\$0.22	6	6	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,552.70	15%	50%	\$10.00	0	0	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$3,726.64	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$207.08	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$3,105.61	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Retrocommissioning	per Facility	Existing	4,611.19	3	\$5,838.98	5%	39%	\$0.07	6	6	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	Existing	4,016.64	3	\$1,064.60	0%	5%	\$0.01	1	1	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	Existing	1,387.94	10	\$5,027.94	15%	24%	\$0.05	0	0	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$7,505.60	0%	0%	\$10.00	0	0	PA - TRM

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Water	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$142.02	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$669.02	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$798.07	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	New	1,095.45	3	\$5,838.98	5%	39%	\$0.36	7	4	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$12,415.94	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$511.22	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$24,664.58	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,738.56	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$25,067.51	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$41.94	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$47.12	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	New	0.00	10	\$277.77	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	New	0.00	10	\$9,519.37	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,469.41	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$59.44	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,275.54	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$26,064.66	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	New	925.68	5	\$250.32	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	9,222.46	10	\$5,005.24	15%	75%	\$0.08	7	7	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	New	1,867.45	5	\$2,525.43	15%	75%	\$0.32	5	5	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	3,253.53	15	\$1,552.70	15%	50%	\$0.06	1	1	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	New	6,256.35	18	\$3,726.64	15%	50%	\$0.06	3	3	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	New	2,187.93	3	\$207.08	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	6,422.72	15	\$3,105.61	15%	50%	\$0.06	3	3	AEG study for State of New Mexico
Water	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	New	2,784.24	3	\$959.11	0%	5%	\$0.02	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Transformer - High Efficiency	per Facility	New	248.62	32	\$16,054.83	15%	52%	\$0.67	0	0	6th Plan
Water	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,393.79	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	Existing	470.60	3	\$1,064.60	0%	5%	\$0.01	0	0	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	Existing	162.40	10	\$5,027.94	15%	24%	\$0.05	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	172.37	15	\$36.75	15%	35%	\$0.02	0	0	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,437.61	20	\$6,013.19	100%	at stock turnover	\$0.11	2	2	BEST Simulation
Water	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,451.12	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	New	166.95	3	\$959.11	0%	5%	\$0.02	0	0	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	New	15.74	32	\$16,054.83	15%	52%	\$0.67	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	61.17	15	\$16.86	15%	35%	\$0.03	0	0	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,025.96	20	\$3,722.36	100%	at stock turnover	\$0.13	0	0	BEST Simulation

Utah Industrial Measure Assumptions

Table H-13 Table of Utah Industrial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	47,444.52	23	\$77,823.81	2%	at stock turnover	\$0.09	56	54	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	26,069.62	23	\$10,594.15	6%	at stock turnover	\$0.03	67	68	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,095.68	10	\$3,084.23	15%	45%	\$0.02	13	15	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,158.37	15	\$1,376.13	15%	60%	\$0.05	4	4	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	627.79	15	\$545.79	15%	75%	\$0.06	2	2	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	22,673.89	15	\$310,952.82	15%	50%	\$0.91	84	97	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	Existing	20,035.96	12	\$36,600.98	15%	50%	\$0.13	76	91	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	Existing	5,930.99	15	\$33,914.72	20%	50%	\$0.12	19	22	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	45,792.50	23	\$70,098.75	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	Existing	19,056.26	18	\$22,156.77	15%	75%	\$0.07	18	22	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,210.76	18	\$1,762.25	15%	25%	\$0.05	1	2	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	Existing	8,032.75	10	\$14,542.22	18%	30%	\$0.04	16	6	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	14,626.46	45	\$133,431.48	15%	25%	\$0.14	16	18	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,494.39	20	\$3,374.32	15%	25%	\$0.06	4	4	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,127.73	45	\$16,830.89	45%	50%	\$0.06	1	1	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	Existing	37,173.07	23	\$79,848.96	5%	at stock turnover	\$0.17	18	18	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	Existing	5,404.93	3	\$680.95	0%	5%	\$0.00	3	4	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$660.00	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	Existing	1,841.34	10	\$3,166.44	15%	24%	\$0.02	2	2	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	38,051.23	23	\$16,029.41	3%	at stock turnover	\$0.03	50	50	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,768.47	10	\$3,100.83	15%	45%	\$0.02	6	8	DEER
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,300.56	4	\$1,865.80	15%	50%	\$0.01	10	12	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,575.76	15	\$1,702.97	15%	60%	\$0.04	2	3	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	549.21	15	\$495.99	15%	75%	\$0.06	1	1	BEST Simulation
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	36,243.93	23	\$59,105.68	2%	at stock turnover	\$0.09	60	58	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	17,143.91	23	\$672.64	6%	at stock turnover	\$0.00	67	67	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	10,053.36	10	\$3,116.25	15%	45%	\$0.02	9	10	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,291.34	15	\$924.40	15%	60%	\$0.05	2	2	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$8,774.89	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	10,670.65	15	\$310,952.82	15%	50%	\$1.80	32	33	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	New	11,174.65	12	\$25,018.50	15%	50%	\$0.14	33	34	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	New	3,317.15	15	\$27,053.45	20%	50%	\$0.11	8	9	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	34,955.91	23	\$53,238.65	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	New	12,420.34	18	\$16,641.59	15%	75%	\$0.08	9	10	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	952.13	18	\$873.42	15%	25%	\$0.06	1	1	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	New	4,329.26	10	\$9,040.48	18%	30%	\$0.05	10	5	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,138.97	45	\$91,812.89	15%	25%	\$0.13	1	1	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	New	1,834.51	20	\$1,289.97	15%	25%	\$0.09	2	2	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.35	45	\$2,038.90	45%	50%	\$0.05	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	New	22,111.02	23	\$47,267.20	5%	at stock turnover	\$0.17	17	17	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	New	3,011.96	3	\$565.94	0%	5%	\$0.00	1	1	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,770.55	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	New	259.69	32	\$9,476.39	15%	52%	\$0.30	1	1	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	24,782.21	23	\$12,152.47	3%	at stock turnover	\$0.04	49	49	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,786.62	10	\$2,016.77	15%	45%	\$0.02	3	3	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,676.46	4	\$1,214.09	15%	50%	\$0.01	4	4	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,030.60	15	\$823.23	15%	60%	\$0.05	1	1	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$17,343.88	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$33,914.72	20%	50%	\$0.12	5	8	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.00	15%	25%	\$0.01	5	10	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.53	33%	60%	\$0.06	5	11	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.80	15%	30%	\$0.03	41	82	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	216	222	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	109	112	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	140	366	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$680.95	0%	5%	\$0.00	1	2	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$3,166.44	15%	24%	\$0.02	0	1	6th Plan
Agriculture	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$27,053.45	20%	50%	\$0.11	3	5	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.61	15%	25%	\$0.01	3	5	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.85	44%	60%	\$0.03	2	3	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.66	15%	30%	\$0.03	27	40	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	229	254	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	116	127	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	148	337	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$565.94	0%	5%	\$0.00	0	1	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$9,476.39	15%	52%	\$0.30	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,297.07	23	\$55,407.08	2%	at stock turnover	\$0.09	5	5	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$36,600.98	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	Existing	14,375.37	15	\$33,914.72	20%	50%	\$0.12	52	53	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,213.23	23	\$42,642.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	Existing	2,506.69	18	\$22,156.77	15%	75%	\$0.07	3	3	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,467.62	18	\$1,762.25	15%	25%	\$0.05	2	2	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	Existing	58,018.31	45	\$133,431.48	15%	25%	\$0.14	70	71	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	Existing	688.10	20	\$3,374.32	15%	25%	\$0.06	1	1	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	21,813.96	45	\$16,830.89	45%	50%	\$0.06	13	13	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	Existing	12,633.63	3	\$680.95	0%	5%	\$0.00	8	8	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$660.00	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	Existing	4,365.53	10	\$3,166.44	15%	24%	\$0.02	5	5	6th Plan
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,623.73	23	\$48,860.36	2%	at stock turnover	\$0.09	11	10	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$25,018.50	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	New	13,614.76	15	\$27,053.45	20%	50%	\$0.11	36	36	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,801.39	23	\$32,385.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	New	1,562.48	18	\$16,641.59	15%	75%	\$0.08	1	1	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-17.56	18	\$873.42	15%	25%	\$0.06	0	0	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	New	55,139.89	45	\$91,812.89	15%	25%	\$0.13	49	49	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	New	-1,117.80	20	\$1,289.97	15%	25%	\$0.09	-1	-1	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	New	3,152.91	45	\$2,038.90	45%	50%	\$0.05	1	1	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	New	11,967.93	3	\$565.94	0%	5%	\$0.00	5	5	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,770.55	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	New	1,106.08	32	\$9,476.39	15%	52%	\$0.30	4	4	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$33,914.72	20%	50%	\$0.12	25	41	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	1,653	1,705	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,248.17	5	\$448.17	5%	40%	\$0.01	41	77	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,128.76	5	\$597.17	15%	50%	\$0.01	52	106	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,016.14	3%	25%	\$0.06	116	232	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$73.90	1%	3%	\$0.01	2	4	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.68	7%	60%	\$0.03	237	442	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$48,611.08	15%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.00	7%	15%	\$0.01	18	33	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.57	10%	25%	\$0.00	1	4	AEG research & analysis
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	847	910	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	144	411	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$680.95	0%	5%	\$0.00	5	9	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$3,166.44	15%	24%	\$0.02	3	4	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$27,053.45	20%	50%	\$0.11	18	27	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	1,748	1,948	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,906.83	5	\$447.38	5%	40%	\$0.01	26	37	Illinois TRM
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,462.13	5	\$596.77	15%	50%	\$0.01	34	48	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.46	4%	25%	\$0.05	79	113	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	557.87	16	\$73.51	1%	3%	\$0.01	1	2	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,402.89	22%	60%	\$0.03	93	134	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$48,611.08	18%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.91	7%	15%	\$0.01	12	17	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.51	5	\$18.57	10%	25%	\$0.00	1	1	AEG research & analysis
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	898	983	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	152	379	EIA 2011/Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	New	537.91	3	\$565.94	0%	5%	\$0.00	3	4	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$9,476.39	15%	52%	\$0.30	2	3	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	5,799.95	5	\$197.61	15%	33%	\$0.00	159	159	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	Existing	2,244.59	3	\$2,612.35	5%	39%	\$0.02	116	116	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,949.94	3	\$680.95	0%	5%	\$0.00	15	15	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	673.80	10	\$3,166.44	15%	24%	\$0.02	9	10	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	5,792.20	5	\$197.61	15%	33%	\$0.00	108	108	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	New	2,237.99	3	\$2,612.35	5%	39%	\$0.02	79	79	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	New	1,970.13	3	\$565.94	0%	5%	\$0.00	10	10	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	New	181.59	32	\$9,476.39	15%	52%	\$0.30	7	7	6th Plan
Agriculture	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	9,064.39	10	\$275.86	15%	75%	\$0.00	427	427	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	9,290.67	15	\$4,717.65	15%	50%	\$0.03	238	268	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,353.30	15	\$774.62	15%	38%	\$0.02	40	43	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	277.12	5	\$47.43	15%	50%	\$0.01	7	8	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	4,329.72	20	\$3,328.08	15%	50%	\$0.05	109	126	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,385.92	15	\$780.54	15%	38%	\$0.02	40	43	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	5,037.87	10	\$1,732.21	15%	50%	\$0.02	133	142	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,964.09	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	Existing	3,968.96	15	\$1,835.36	8%	38%	\$0.03	91	97	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,262.43	3	\$195.63	8%	38%	\$0.01	51	54	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	6,501.87	15	\$2,936.82	8%	38%	\$0.03	143	158	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$790.42	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	29,055.61	10	\$2,521.45	8%	38%	\$0.01	677	684	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	Existing	9,783.41	15	\$735.49	8%	38%	\$0.01	231	230	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	Existing	5,010.36	3	\$209.07	8%	38%	\$0.00	113	118	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	14,951.62	10	\$1,882.79	8%	38%	\$0.01	337	352	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	705.15	8	\$981.71	10%	50%	\$0.10	83	91	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	500.31	8	\$348.18	5%	25%	\$0.05	30	32	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	Existing	36,257.57	10	\$1,242.94	15%	35%	\$0.00	569	569	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,904.92	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$7.11	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	12,834.15	17	\$885.27	5%	6%	\$0.01	40	40	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,002.83	10	\$416.16	15%	36%	\$0.02	126	134	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	Existing	12,293.48	17	\$5,643.23	25%	44%	\$0.03	695	733	RSMMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,552.67	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,233.85	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	5,132.71	10	\$679.76	8%	38%	\$0.01	115	121	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	Existing	5,184.01	15	\$828.76	8%	38%	\$0.01	117	122	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	Existing	2,703.03	3	\$235.94	8%	38%	\$0.01	59	64	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	8,402.70	12	\$2,302.51	8%	38%	\$0.02	182	198	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	Existing	4,827.90	3	\$2,612.35	5%	39%	\$0.02	518	515	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	Existing	4,446.70	3	\$680.95	0%	5%	\$0.00	69	71	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$716.12	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	Existing	1,483.75	10	\$3,166.44	15%	24%	\$0.02	42	44	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$646.96	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Commissioning	per Facility	New	4,249.39	3	\$2,612.35	5%	39%	\$0.02	429	412	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	New	9,064.39	10	\$275.86	15%	75%	\$0.00	312	312	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	9,335.92	15	\$4,717.65	15%	50%	\$0.03	184	186	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,344.50	15	\$774.62	15%	38%	\$0.02	30	30	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	274.56	5	\$47.43	15%	50%	\$0.01	5	5	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	New	4,359.27	20	\$3,328.08	15%	50%	\$0.05	86	87	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,348.41	15	\$780.54	15%	38%	\$0.02	30	30	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	4,991.56	10	\$1,732.21	15%	50%	\$0.02	99	100	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,964.09	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	New	3,944.35	15	\$1,835.36	8%	38%	\$0.03	67	67	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	New	2,278.04	3	\$195.63	8%	38%	\$0.01	39	39	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	6,453.50	15	\$2,936.82	8%	38%	\$0.03	109	110	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$790.42	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	28,948.22	10	\$2,521.45	8%	38%	\$0.01	498	498	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	New	9,792.91	15	\$735.49	8%	38%	\$0.01	168	168	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	New	4,932.02	3	\$209.07	8%	38%	\$0.00	85	85	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	New	14,686.77	10	\$1,882.79	8%	38%	\$0.01	252	252	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	618.76	8	\$981.71	10%	50%	\$0.11	71	71	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	439.03	8	\$348.18	5%	25%	\$0.06	25	25	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	New	36,257.57	10	\$1,242.94	15%	35%	\$0.00	416	416	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,904.92	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$7.11	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	11,317.93	17	\$885.27	5%	6%	\$0.01	32	32	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,736.68	10	\$416.16	15%	36%	\$0.02	103	104	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	New	11,015.36	17	\$3,385.78	25%	44%	\$0.02	592	598	RSMMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,552.67	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,233.85	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	5,021.58	10	\$679.76	8%	38%	\$0.01	86	86	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	New	5,092.08	15	\$828.76	8%	38%	\$0.01	87	87	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	New	2,641.12	3	\$235.94	8%	38%	\$0.01	45	45	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	New	8,052.36	12	\$2,302.51	8%	38%	\$0.02	136	138	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	New	3,944.54	3	\$565.94	0%	5%	\$0.00	56	56	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$716.12	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	New	343.96	32	\$9,476.39	15%	52%	\$0.30	36	36	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$646.96	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$316.96	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$5.93	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$26.87	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$32.41	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	2,475.30	10	\$18,159.99	15%	15%	\$0.52	1	1	VT - TRM
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$20.55	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$997.52	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$110.66	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,013.72	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	308.45	15	\$52.56	15%	16%	\$0.01	0	0	MT - IRP 2013
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	5,494.69	15	\$69.16	15%	16%	\$0.00	6	6	OPA - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Heat Lamps	per Facility	Existing	10,199.34	10	\$406.28	15%	16%	\$0.00	11	11	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	Existing	9,312.30	10	\$13,923.32	15%	16%	\$0.12	10	10	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,460.87	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$59.28	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,856.99	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$25,999.81	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	Existing	85.82	5	\$23.32	15%	75%	\$0.02	4	4	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	855.86	10	\$464.37	15%	75%	\$0.04	40	40	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	Existing	1,782.88	5	\$2,519.08	15%	75%	\$0.11	410	420	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	6,672.69	15	\$3,280.26	15%	50%	\$0.04	182	185	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	Existing	13,161.86	18	\$7,873.02	15%	50%	\$0.04	345	367	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	Existing	4,620.30	3	\$437.50	15%	50%	\$0.01	123	127	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	13,724.48	15	\$6,560.91	15%	50%	\$0.04	358	378	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	Existing	1,046.51	3	\$2,612.35	5%	39%	\$0.02	722	140	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	Existing	2,694.49	3	\$680.95	0%	5%	\$0.00	53	53	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	Existing	927.87	10	\$3,166.44	15%	24%	\$0.02	33	34	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$316.96	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$5.93	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$26.87	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$32.41	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	New	1,613.88	3	\$2,612.35	5%	39%	\$0.02	520	218	Energy Management Program Design for PC
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	2,464.35	10	\$18,159.99	15%	15%	\$0.52	1	1	VT - TRM
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$20.55	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$997.52	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$110.66	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,013.72	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	New	308.41	15	\$52.56	15%	16%	\$0.01	0	0	MT - IRP 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	New	5,494.69	15	\$69.16	15%	16%	\$0.00	4	4	OPA - TRM
Agriculture	Process	Heat Lamps	per Facility	New	10,197.38	10	\$406.28	15%	16%	\$0.00	8	8	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	New	9,289.42	10	\$13,923.32	15%	16%	\$0.12	7	7	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,460.87	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$59.28	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,856.99	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$25,999.81	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$23.32	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$464.37	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	New	2,160.76	5	\$2,519.08	15%	75%	\$0.09	297	297	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	6,873.37	15	\$3,280.26	15%	50%	\$0.04	131	138	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	New	13,217.10	18	\$7,873.02	15%	50%	\$0.04	259	265	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	New	4,622.21	3	\$437.50	15%	50%	\$0.01	91	93	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	13,568.58	15	\$6,560.91	15%	50%	\$0.04	270	272	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	New	3,274.51	3	\$565.94	0%	5%	\$0.00	38	38	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	New	292.03	32	\$9,476.39	15%	52%	\$0.30	25	25	6th Plan
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$36,600.98	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	Existing	416.04	3	\$680.95	0%	5%	\$0.00	1	2	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	Existing	143.57	10	\$3,166.44	15%	24%	\$0.02	1	1	6th Plan
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	152.39	15	\$32.80	15%	35%	\$0.01	2	2	6th Plan
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,616.93	20	\$5,545.73	100%	at stock turnover	\$0.09	42	42	BEST Simulation
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$25,018.50	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	New	154.68	3	\$565.94	0%	5%	\$0.00	0	0	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	New	14.59	32	\$9,476.39	15%	52%	\$0.30	0	0	6th Plan
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	56.68	15	\$15.81	15%	35%	\$0.02	1	1	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,723.26	20	\$3,491.68	100%	at stock turnover	\$0.10	17	17	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	63,715.13	23	\$104,512.67	2%	at stock turnover	\$0.09	255	247	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	35,009.93	23	\$14,227.30	6%	at stock turnover	\$0.03	309	310	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	14,900.82	10	\$4,142.23	15%	45%	\$0.02	62	70	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,898.56	15	\$1,848.08	15%	60%	\$0.05	18	21	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	843.08	15	\$732.80	15%	75%	\$0.06	7	8	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	30,449.66	15	\$146,299.09	15%	50%	\$0.32	387	443	BEST Simulation
Chemical Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	26,907.09	12	\$49,153.00	15%	50%	\$0.13	346	419	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	Existing	7,964.96	15	\$45,081.43	20%	50%	\$0.12	88	99	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	61,496.55	23	\$94,138.38	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	25,591.40	18	\$29,755.35	15%	75%	\$0.07	84	102	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,625.98	18	\$2,366.30	15%	25%	\$0.05	6	7	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	Existing	10,787.49	10	\$19,529.48	18%	30%	\$0.04	75	28	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	19,642.45	45	\$179,190.54	15%	25%	\$0.14	73	82	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	4,692.76	20	\$4,531.78	15%	25%	\$0.06	17	20	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,514.47	45	\$22,602.73	45%	50%	\$0.06	3	3	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	49,921.18	23	\$107,232.33	5%	at stock turnover	\$0.17	83	83	BEST Simulation
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	Existing	7,258.50	3	\$1,043.88	0%	5%	\$0.00	14	16	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$62.10	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	2,472.80	10	\$4,876.88	15%	24%	\$0.03	9	10	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	51,100.50	23	\$21,526.53	3%	at stock turnover	\$0.03	230	229	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	14,461.41	10	\$4,164.17	15%	45%	\$0.02	28	35	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	19,204.79	4	\$2,505.75	15%	50%	\$0.01	44	55	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,459.09	15	\$2,286.71	15%	60%	\$0.04	10	13	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	737.56	15	\$666.04	15%	75%	\$0.06	3	4	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	48,673.41	23	\$79,375.36	2%	at stock turnover	\$0.09	276	265	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	23,023.24	23	\$122.55	6%	at stock turnover	\$0.00	306	309	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	13,501.05	10	\$4,184.81	15%	45%	\$0.02	42	44	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,734.20	15	\$1,241.16	15%	60%	\$0.05	8	9	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$825.77	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	14,330.04	15	\$146,299.09	15%	50%	\$0.63	145	150	BEST Simulation
Chemical Mfg	Cooling	De-stratification Fans (HVLS)	per Facility	New	15,006.88	12	\$33,598.40	15%	50%	\$0.14	152	158	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	New	4,454.73	15	\$35,869.12	20%	50%	\$0.11	39	40	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	46,943.68	23	\$71,496.29	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	16,679.77	18	\$22,348.73	15%	75%	\$0.08	41	45	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,278.65	18	\$1,172.74	15%	25%	\$0.06	4	4	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	New	5,813.94	10	\$12,140.70	18%	30%	\$0.05	45	22	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,529.57	45	\$123,299.19	15%	25%	\$0.13	4	5	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	2,463.63	20	\$1,732.61	15%	25%	\$0.09	7	7	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.81	45	\$2,737.99	45%	50%	\$0.05	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	New	29,693.77	23	\$63,476.99	5%	at stock turnover	\$0.17	77	78	BEST Simulation
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	New	4,044.87	3	\$889.73	0%	5%	\$0.00	6	6	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$166.60	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	New	348.75	32	\$14,892.09	15%	52%	\$0.33	4	4	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	33,281.01	23	\$16,320.04	3%	at stock turnover	\$0.04	225	225	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,771.07	10	\$2,708.62	15%	45%	\$0.02	12	13	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	10,309.02	4	\$1,630.52	15%	50%	\$0.01	18	20	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,384.03	15	\$1,105.61	15%	60%	\$0.05	3	3	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$1,632.01	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$45,081.43	20%	50%	\$0.12	16	26	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.01	15%	25%	\$0.01	18	35	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.70	33%	60%	\$0.06	19	39	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.71	15%	30%	\$0.03	141	281	AEG research & analysis
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	738	759	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	374	382	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	478	1,249	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$1,043.88	0%	5%	\$0.00	3	6	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$4,876.88	15%	24%	\$0.03	2	3	6th Plan
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$35,869.12	20%	50%	\$0.11	11	16	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.82	15%	25%	\$0.01	12	17	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.83	44%	60%	\$0.03	8	11	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.69	15%	30%	\$0.03	92	137	AEG research & analysis
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	781	867	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	396	434	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	505	1,152	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$889.73	0%	5%	\$0.00	2	2	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$14,892.09	15%	52%	\$0.33	1	2	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	5,770.71	23	\$74,408.37	2%	at stock turnover	\$0.09	23	22	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$49,153.00	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Heating	Energy Management System	per Facility	Existing	19,305.25	15	\$45,081.43	20%	50%	\$0.12	238	241	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,629.29	23	\$57,265.66	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	3,366.33	18	\$29,755.35	15%	75%	\$0.07	12	13	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,970.93	18	\$2,366.30	15%	25%	\$0.05	8	8	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	77,915.08	45	\$179,190.54	15%	25%	\$0.14	323	325	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	924.08	20	\$4,531.78	15%	25%	\$0.06	4	4	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	29,294.83	45	\$22,602.73	45%	50%	\$0.06	61	61	BEST Simulation
Chemical Mfg	Heating	Strategic Energy Management	per Facility	Existing	16,966.20	3	\$1,043.88	0%	5%	\$0.00	35	35	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$62.10	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	5,862.64	10	\$4,876.88	15%	24%	\$0.03	23	23	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	8,895.27	23	\$65,616.51	2%	at stock turnover	\$0.09	50	48	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$33,598.40	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Heating	Energy Management System	per Facility	New	18,283.79	15	\$35,869.12	20%	50%	\$0.11	167	167	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,447.97	23	\$43,492.16	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,098.31	18	\$22,348.73	15%	75%	\$0.08	6	6	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-23.59	18	\$1,172.74	15%	25%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	74,049.54	45	\$123,299.19	15%	25%	\$0.13	225	225	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,501.13	20	\$1,732.61	15%	25%	\$0.09	-5	-5	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,234.16	45	\$2,737.99	45%	50%	\$0.05	6	6	BEST Simulation
Chemical Mfg	Heating	Strategic Energy Management	per Facility	New	16,072.20	3	\$889.73	0%	5%	\$0.00	24	24	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$166.60	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,485.40	32	\$14,892.09	15%	52%	\$0.33	17	17	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$45,081.43	20%	50%	\$0.12	86	140	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	5,645	5,823	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,248.17	5	\$447.93	5%	40%	\$0.01	139	263	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,128.76	5	\$597.25	15%	50%	\$0.01	178	362	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,015.97	3%	25%	\$0.06	396	791	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$74.00	1%	3%	\$0.01	7	13	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.48	7%	60%	\$0.03	811	1,508	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$22,870.85	15%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.15	7%	15%	\$0.01	62	113	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.78	10%	25%	\$0.00	4	14	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	2,895	3,108	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	490	1,405	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$1,043.88	0%	5%	\$0.00	16	31	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$4,876.88	15%	24%	\$0.03	10	15	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$35,869.12	20%	50%	\$0.11	63	91	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	5,971	6,652	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,826.52	5	\$447.56	5%	40%	\$0.01	89	120	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,542.44	5	\$596.69	15%	50%	\$0.01	115	168	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.36	4%	25%	\$0.05	269	388	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	557.87	16	\$73.63	1%	3%	\$0.01	4	6	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,402.93	22%	60%	\$0.03	319	459	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$22,870.85	18%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.86	7%	15%	\$0.01	40	58	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.51	5	\$18.59	10%	25%	\$0.00	3	5	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	3,067	3,357	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	518	1,295	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	537.91	3	\$889.73	0%	5%	\$0.00	11	15	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$14,892.09	15%	52%	\$0.33	6	9	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$18.59	0%	0%	\$10.00	0	0	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,513.93	3	\$4,337.47	5%	39%	\$0.02	446	446	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,183.93	3	\$1,043.88	0%	5%	\$0.00	57	57	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	754.65	10	\$4,876.88	15%	24%	\$0.03	36	37	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$18.59	0%	0%	\$10.00	0	0	MI - TRM
Chemical Mfg	Miscellaneous	Commissioning	per Facility	New	2,516.55	3	\$4,337.47	5%	39%	\$0.02	302	302	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,183.93	3	\$889.73	0%	5%	\$0.00	39	39	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	204.19	32	\$14,892.09	15%	52%	\$0.33	27	27	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	36,153.08	10	\$1,100.59	15%	75%	\$0.00	5,813	5,813	MI - TRM
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	37,440.91	15	\$18,815.65	15%	50%	\$0.03	3,306	3,667	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	9,444.89	15	\$3,089.24	15%	38%	\$0.02	549	582	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,105.29	5	\$189.85	15%	50%	\$0.01	100	106	MI - TRM
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	17,268.98	20	\$13,274.21	15%	50%	\$0.05	1,489	1,721	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	9,457.34	15	\$3,112.67	15%	38%	\$0.02	549	584	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	20,093.40	10	\$6,908.86	15%	50%	\$0.02	1,809	1,933	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$278.91	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	15,839.75	15	\$7,321.09	8%	38%	\$0.03	1,205	1,324	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	9,048.43	3	\$780.96	8%	38%	\$0.01	714	741	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	25,948.46	15	\$11,713.60	8%	38%	\$0.03	1,989	2,153	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$74.38	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	13,390.36	10	\$1,162.14	8%	38%	\$0.01	1,066	1,076	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	Existing	4,519.14	15	\$338.97	8%	38%	\$0.01	363	363	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	Existing	2,309.04	3	\$96.32	8%	38%	\$0.00	179	186	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	6,890.50	10	\$867.60	8%	38%	\$0.01	530	554	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,321.14	8	\$2,069.72	10%	50%	\$0.11	677	721	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	937.36	8	\$733.73	5%	25%	\$0.06	240	256	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$116.96	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,514.87	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$5.76	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	24,030.97	17	\$1,866.86	5%	6%	\$0.01	320	322	E3T Website
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	3,795.23	10	\$877.09	15%	36%	\$0.02	1,053	1,078	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	22,950.12	17	\$11,897.68	25%	44%	\$0.04	5,607	5,842	RSMean 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,029.93	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$981.22	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	16,068.43	10	\$2,033.65	8%	38%	\$0.01	1,279	1,292	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	Existing	16,231.37	15	\$2,479.35	8%	38%	\$0.01	1,304	1,305	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	8,484.07	3	\$705.28	8%	38%	\$0.01	669	682	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	26,299.05	12	\$6,887.10	8%	38%	\$0.02	2,033	2,114	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	Existing	9,045.50	3	\$4,337.47	5%	39%	\$0.02	4,247	4,121	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	Existing	8,326.10	3	\$1,043.88	0%	5%	\$0.00	556	564	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$569.35	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	2,781.03	10	\$4,876.88	15%	24%	\$0.03	336	349	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$1,773.70	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	New	8,990.87	3	\$4,337.47	5%	39%	\$0.02	3,089	2,980	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	36,153.08	10	\$1,100.59	15%	75%	\$0.00	4,249	4,249	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	37,236.04	15	\$18,815.65	15%	50%	\$0.03	2,502	2,530	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	9,350.99	15	\$3,089.24	15%	38%	\$0.02	403	410	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,095.06	5	\$189.85	15%	50%	\$0.01	74	75	MI - TRM
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	17,386.84	20	\$13,274.21	15%	50%	\$0.05	1,166	1,179	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	9,366.58	15	\$3,112.67	15%	38%	\$0.02	409	411	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	19,908.71	10	\$6,908.86	15%	50%	\$0.02	1,342	1,357	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$278.91	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	New	16,087.26	15	\$7,321.09	8%	38%	\$0.03	907	939	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	9,085.89	3	\$780.96	8%	38%	\$0.01	532	532	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	25,384.27	15	\$11,713.60	8%	38%	\$0.03	1,486	1,481	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$74.38	15%	50%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	13,340.87	10	\$1,162.14	8%	38%	\$0.01	783	783	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	New	4,519.14	15	\$338.97	8%	38%	\$0.01	265	266	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	New	2,272.94	3	\$96.32	8%	38%	\$0.00	133	133	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	6,768.44	10	\$867.60	8%	38%	\$0.01	396	396	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,309.17	8	\$2,069.72	10%	50%	\$0.11	510	510	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	928.89	8	\$733.73	5%	25%	\$0.06	181	181	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$116.96	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,514.87	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$5.76	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	24,047.53	17	\$1,866.86	5%	6%	\$0.01	236	235	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	3,730.69	10	\$877.09	15%	36%	\$0.02	765	765	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	23,663.26	17	\$7,138.68	25%	44%	\$0.02	4,396	4,396	RSMears 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,029.93	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$981.22	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	16,009.05	10	\$2,033.65	8%	38%	\$0.01	940	940	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	New	16,234.58	15	\$2,479.35	8%	38%	\$0.01	954	954	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	New	8,419.63	3	\$705.28	8%	38%	\$0.01	494	494	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	25,667.86	12	\$6,887.10	8%	38%	\$0.02	1,487	1,504	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	New	8,330.05	3	\$889.73	0%	5%	\$0.00	408	408	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$569.35	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	New	727.76	32	\$14,892.09	15%	52%	\$0.33	264	264	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$1,773.70	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$947.93	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$850.31	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$4,002.40	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$4,774.43	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$1,708.81	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$3,058.93	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$147,553.64	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$16,383.34	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$149,963.26	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$87.21	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$6.51	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$38.30	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$1,310.15	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$6,567.84	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$112.31	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$4,740.59	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$49,341.73	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	Existing	203.41	5	\$55.04	15%	75%	\$0.02	32	33	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,028.65	10	\$1,100.96	15%	75%	\$0.04	320	326	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	Existing	3,468.14	5	\$4,780.75	15%	75%	\$0.11	2,754	2,788	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	3,797.28	15	\$1,815.16	15%	50%	\$0.04	345	357	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	Existing	7,283.23	18	\$4,356.62	15%	50%	\$0.04	653	694	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	2,556.68	3	\$242.10	15%	50%	\$0.01	233	240	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	7,489.66	15	\$3,630.52	15%	50%	\$0.04	677	707	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	Existing	1,412.54	3	\$4,337.47	5%	39%	\$0.02	3,266	643	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	Existing	5,115.18	3	\$1,043.88	0%	5%	\$0.00	343	343	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	Existing	1,765.77	10	\$4,876.88	15%	24%	\$0.03	218	222	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$947.93	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$850.31	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$4,002.40	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$4,774.43	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Commissioning	per Facility	New	1,414.68	3	\$4,337.47	5%	39%	\$0.02	2,388	932	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$1,708.81	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$3,058.93	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$147,553.64	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$16,383.34	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$149,963.26	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$87.21	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$6.51	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$38.30	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$1,310.15	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$6,567.84	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$112.31	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$4,740.59	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$49,341.73	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	New	203.62	5	\$55.04	15%	75%	\$0.02	24	24	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,028.66	10	\$1,100.96	15%	75%	\$0.04	236	238	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	New	3,459.63	5	\$4,780.75	15%	75%	\$0.11	2,030	2,030	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	3,803.44	15	\$1,815.16	15%	50%	\$0.04	255	261	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	New	7,313.79	18	\$4,356.62	15%	50%	\$0.04	489	500	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	New	2,557.74	3	\$242.10	15%	50%	\$0.01	171	175	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	7,508.29	15	\$3,630.52	15%	50%	\$0.04	503	514	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	New	5,115.18	3	\$889.73	0%	5%	\$0.00	250	250	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	New	467.57	32	\$14,892.09	15%	52%	\$0.33	170	170	6th Plan
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$49,153.00	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	558.72	3	\$1,043.88	0%	5%	\$0.00	6	9	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	192.81	10	\$4,876.88	15%	24%	\$0.03	4	5	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	204.65	15	\$44.25	15%	35%	\$0.01	9	11	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,200.26	20	\$7,447.58	100%	at stock turnover	\$0.09	191	191	BEST Simulation
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$33,598.40	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	New	207.73	3	\$889.73	0%	5%	\$0.00	2	2	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	19.59	32	\$14,892.09	15%	52%	\$0.33	1	1	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	76.12	15	\$21.20	15%	35%	\$0.02	3	3	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,657.17	20	\$4,689.12	100%	at stock turnover	\$0.10	78	79	BEST Simulation
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	98,348.56	23	\$161,322.30	2%	at stock turnover	\$0.09	961	931	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	54,040.17	23	\$21,960.79	6%	at stock turnover	\$0.03	1,165	1,171	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	23,000.42	10	\$6,393.66	15%	45%	\$0.02	233	264	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	4,474.13	15	\$2,852.70	15%	60%	\$0.05	67	78	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	1,301.36	15	\$1,131.13	15%	75%	\$0.06	27	30	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	47,001.09	15	\$109,643.00	15%	50%	\$0.15	1,460	1,673	BEST Simulation
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	41,532.89	12	\$75,871.06	15%	50%	\$0.13	1,307	1,581	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	12,294.45	15	\$68,850.59	20%	50%	\$0.12	334	375	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	94,924.05	23	\$145,308.89	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	39,502.04	18	\$45,929.24	15%	75%	\$0.07	317	386	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,509.81	18	\$3,652.58	15%	25%	\$0.05	23	27	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	16,651.22	10	\$30,144.86	18%	30%	\$0.04	284	107	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	30,319.43	45	\$276,592.59	15%	25%	\$0.14	276	308	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	7,243.59	20	\$6,994.97	15%	25%	\$0.06	65	74	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	2,337.68	45	\$34,888.86	45%	50%	\$0.06	11	12	BEST Simulation
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	77,056.69	23	\$165,520.28	5%	at stock turnover	\$0.17	312	313	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	11,203.97	3	\$1,052.67	0%	5%	\$0.00	52	61	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$232.72	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	3,816.94	10	\$4,830.26	15%	24%	\$0.02	32	36	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	78,877.04	23	\$33,227.64	3%	at stock turnover	\$0.03	870	866	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	22,322.16	10	\$6,427.52	15%	45%	\$0.02	107	134	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	29,643.89	4	\$3,867.74	15%	50%	\$0.01	167	206	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	5,339.34	15	\$3,529.81	15%	60%	\$0.04	38	48	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	1,138.47	15	\$1,028.15	15%	75%	\$0.06	11	14	BEST Simulation
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	75,130.67	23	\$122,521.18	2%	at stock turnover	\$0.09	1,043	1,001	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	35,537.91	23	\$27.36	6%	at stock turnover	\$0.00	1,153	1,167	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	20,839.78	10	\$6,459.43	15%	45%	\$0.02	160	167	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,676.85	15	\$1,915.97	15%	60%	\$0.05	31	32	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$3,094.06	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	22,119.37	15	\$109,643.00	15%	50%	\$0.31	545	567	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	23,164.13	12	\$51,861.36	15%	50%	\$0.14	573	596	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	New	6,876.17	15	\$54,633.79	20%	50%	\$0.11	146	152	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	72,460.71	23	\$110,359.30	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	25,746.34	18	\$34,496.85	15%	75%	\$0.08	156	170	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,973.68	18	\$1,810.06	15%	25%	\$0.06	14	15	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	8,974.21	10	\$18,740.06	18%	30%	\$0.05	168	85	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	2,360.99	45	\$190,320.63	15%	25%	\$0.13	17	17	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	3,802.78	20	\$2,674.32	15%	25%	\$0.09	27	28	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	2.80	45	\$4,226.30	45%	50%	\$0.05	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	45,834.32	23	\$97,980.98	5%	at stock turnover	\$0.17	292	295	BEST Simulation
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	6,243.53	3	\$814.38	0%	5%	\$0.00	22	23	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$624.30	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	538.31	32	\$13,633.19	15%	52%	\$0.29	14	15	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	51,371.46	23	\$25,191.07	3%	at stock turnover	\$0.04	850	849	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	11,995.17	10	\$4,181.01	15%	45%	\$0.02	45	48	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	15,912.66	4	\$2,516.72	15%	50%	\$0.01	69	75	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,136.35	15	\$1,706.66	15%	60%	\$0.05	12	13	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$6,115.51	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$68,850.59	20%	50%	\$0.12	38	63	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.05	15%	25%	\$0.01	44	86	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.68	33%	60%	\$0.06	45	95	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.71	15%	30%	\$0.03	345	687	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	1,805	1,855	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	914	934	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	1,170	3,053	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$1,052.67	0%	5%	\$0.00	6	14	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$4,830.26	15%	24%	\$0.02	4	6	6th Plan
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$54,633.79	20%	50%	\$0.11	26	38	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.77	15%	25%	\$0.01	29	42	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.76	44%	60%	\$0.03	19	28	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.70	15%	30%	\$0.03	226	334	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	1,909	2,119	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	968	1,060	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	1,235	2,815	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$814.38	0%	5%	\$0.00	4	6	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$13,633.19	15%	52%	\$0.29	3	4	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	8,907.47	23	\$114,854.29	2%	at stock turnover	\$0.09	86	82	BEST Simulation
Electronic Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$75,871.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	Existing	29,798.94	15	\$68,850.59	20%	50%	\$0.12	898	910	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,514.93	23	\$88,393.38	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	5,196.16	18	\$45,929.24	15%	75%	\$0.07	47	48	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	3,042.26	18	\$3,652.58	15%	25%	\$0.05	31	31	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	120,267.14	45	\$276,592.59	15%	25%	\$0.14	1,219	1,225	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,426.38	20	\$6,994.97	15%	25%	\$0.06	14	15	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	45,218.53	45	\$34,888.86	45%	50%	\$0.06	230	230	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	26,188.46	3	\$1,052.67	0%	5%	\$0.00	133	134	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$232.72	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	9,049.38	10	\$4,830.26	15%	24%	\$0.02	86	86	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	13,730.44	23	\$101,283.48	2%	at stock turnover	\$0.09	188	180	BEST Simulation
Electronic Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$51,861.36	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	New	28,222.26	15	\$54,633.79	20%	50%	\$0.11	629	630	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	9,952.88	23	\$67,133.06	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	3,238.88	18	\$34,496.85	15%	75%	\$0.08	22	22	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-36.41	18	\$1,810.06	15%	25%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	114,300.42	45	\$190,320.63	15%	25%	\$0.13	850	851	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-2,317.10	20	\$2,674.32	15%	25%	\$0.09	-17	-17	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	6,535.71	45	\$4,226.30	45%	50%	\$0.05	24	24	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	24,808.52	3	\$814.38	0%	5%	\$0.00	92	92	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$624.30	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	2,292.81	32	\$13,633.19	15%	52%	\$0.29	63	63	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$68,850.59	20%	50%	\$0.12	210	342	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	13,802	14,237	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,346.57	5	\$448.02	5%	40%	\$0.01	341	664	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,030.36	5	\$597.27	15%	50%	\$0.01	434	865	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,016.02	3%	25%	\$0.06	967	1,934	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$74.00	1%	3%	\$0.01	16	31	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.51	7%	60%	\$0.03	1,982	3,687	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$17,140.43	15%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.13	7%	15%	\$0.01	152	277	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.67	10%	25%	\$0.00	10	33	AEG research & analysis
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	7,077	7,598	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	1,198	3,435	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$1,052.67	0%	5%	\$0.00	39	77	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$4,830.26	15%	24%	\$0.02	24	37	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$54,633.79	20%	50%	\$0.11	154	222	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	14,598	16,264	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,906.83	5	\$447.46	5%	40%	\$0.01	219	308	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,462.13	5	\$596.71	15%	50%	\$0.01	282	397	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.35	4%	25%	\$0.05	657	947	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	557.87	16	\$73.58	1%	3%	\$0.01	11	15	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,403.00	22%	60%	\$0.03	779	1,123	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$17,140.43	18%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.93	7%	15%	\$0.01	98	142	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.51	5	\$18.67	10%	25%	\$0.00	6	11	AEG research & analysis
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	7,499	8,208	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	1,266	3,167	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	537.91	3	\$814.38	0%	5%	\$0.00	26	37	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$13,633.19	15%	52%	\$0.29	15	22	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$69.68	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,427.80	3	\$1,138.51	5%	39%	\$0.02	1,054	1,053	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,109.11	3	\$1,052.67	0%	5%	\$0.00	135	135	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	728.80	10	\$4,830.26	15%	24%	\$0.02	86	87	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$69.68	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	2,430.33	3	\$1,138.51	5%	39%	\$0.02	714	714	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,109.11	3	\$814.38	0%	5%	\$0.00	91	91	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	197.20	32	\$13,633.19	15%	52%	\$0.29	63	63	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,553.12	10	\$108.14	15%	75%	\$0.00	1,397	1,397	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	3,679.69	15	\$1,849.22	15%	50%	\$0.03	794	881	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	930.79	15	\$303.65	15%	38%	\$0.02	132	140	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	108.63	5	\$18.67	15%	50%	\$0.01	24	26	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,697.19	20	\$1,304.62	15%	50%	\$0.05	358	413	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	932.01	15	\$305.88	15%	38%	\$0.02	132	141	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,973.56	10	\$679.07	15%	50%	\$0.02	434	464	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,045.15	15%	30%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	1,555.78	15	\$719.48	8%	38%	\$0.03	298	318	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	889.28	3	\$76.78	8%	38%	\$0.01	169	178	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,548.65	15	\$1,151.20	8%	38%	\$0.03	468	517	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$278.71	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	2,909.62	10	\$252.51	8%	38%	\$0.01	566	572	6th Plan
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	981.97	15	\$73.72	8%	38%	\$0.01	193	193	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	501.74	3	\$20.90	8%	38%	\$0.00	95	99	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	1,497.25	10	\$188.54	8%	38%	\$0.01	282	294	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	203.96	8	\$355.49	10%	50%	\$0.13	206	217	Developed from RTF
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	144.72	8	\$126.11	5%	25%	\$0.06	73	77	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$438.27	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,039.29	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$7.80	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	3,664.98	17	\$320.65	5%	6%	\$0.01	96	96	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	578.89	10	\$150.64	15%	36%	\$0.02	310	322	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	3,540.28	17	\$2,043.89	25%	44%	\$0.04	1,702	1,763	RSMMeans 2013
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,732.85	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,321.07	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	606.17	10	\$76.78	8%	38%	\$0.01	118	119	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	612.32	15	\$93.51	8%	38%	\$0.01	120	120	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	320.06	3	\$26.62	8%	38%	\$0.01	61	63	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	994.85	12	\$259.75	8%	38%	\$0.02	188	196	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	1,396.52	3	\$1,138.51	5%	39%	\$0.02	1,282	1,244	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,272.75	3	\$1,052.67	0%	5%	\$0.00	166	168	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$766.58	15%	25%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	432.88	10	\$4,830.26	15%	24%	\$0.02	103	106	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$311.45	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	New	1,588.90	3	\$1,138.51	5%	39%	\$0.02	1,338	1,290	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	3,553.12	10	\$108.14	15%	75%	\$0.00	1,021	1,021	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	3,659.55	15	\$1,849.22	15%	50%	\$0.03	601	608	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	919.01	15	\$303.65	15%	38%	\$0.02	97	99	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	107.62	5	\$18.67	15%	50%	\$0.01	18	18	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	1,708.78	20	\$1,304.62	15%	50%	\$0.05	280	283	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	920.55	15	\$305.88	15%	38%	\$0.02	98	99	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	1,956.63	10	\$679.07	15%	50%	\$0.02	323	326	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,045.15	15%	30%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	1,546.13	15	\$719.48	8%	38%	\$0.03	223	220	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	892.96	3	\$76.78	8%	38%	\$0.01	128	128	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	2,529.69	15	\$1,151.20	8%	38%	\$0.03	352	361	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$278.71	15%	50%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	2,898.87	10	\$252.51	8%	38%	\$0.01	416	416	6th Plan
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	New	980.66	15	\$73.72	8%	38%	\$0.01	141	141	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	493.89	3	\$20.90	8%	38%	\$0.00	71	71	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	1,470.73	10	\$188.54	8%	38%	\$0.01	211	211	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	231.36	8	\$355.49	10%	50%	\$0.11	221	221	Developed from RTF
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	164.15	8	\$126.11	5%	25%	\$0.06	78	78	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$438.27	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,039.29	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$7.80	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,149.30	17	\$320.65	5%	6%	\$0.01	99	99	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	648.34	10	\$150.64	15%	36%	\$0.02	322	325	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,112.39	17	\$1,226.31	25%	44%	\$0.02	1,848	1,869	RSMMeans 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,732.85	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,321.07	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	603.93	10	\$76.78	8%	38%	\$0.01	87	87	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	612.44	15	\$93.51	8%	38%	\$0.01	88	88	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	317.63	3	\$26.62	8%	38%	\$0.01	46	46	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	968.30	12	\$259.75	8%	38%	\$0.02	137	139	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	1,441.93	3	\$814.38	0%	5%	\$0.00	173	173	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$766.58	15%	25%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	128.61	32	\$13,633.19	15%	52%	\$0.29	114	114	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$311.45	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$35.81	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	4,313.36	1	\$28.01	15%	75%	\$0.00	1,696	1,696	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	1,318.24	10	\$131.69	15%	75%	\$0.01	505	557	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	737.25	20	\$157.19	15%	75%	\$0.01	280	290	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$6,403.27	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	399.99	10	\$100.61	15%	75%	\$0.01	146	164	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	7,841.69	10	\$4,855.90	15%	75%	\$0.04	2,847	3,245	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	481.68	10	\$539.16	15%	75%	\$0.04	139	237	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	4,188.40	10	\$4,935.19	15%	75%	\$0.04	1,191	2,084	6th Plan
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$47.24	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$24.39	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$143.25	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$4,909.41	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,050.02	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$35.12	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,567.30	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$15,400.88	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	541.25	5	\$146.46	15%	75%	\$0.02	210	213	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	5,357.15	10	\$2,929.76	15%	75%	\$0.04	2,085	2,106	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,024.93	5	\$1,492.19	15%	75%	\$0.11	1,954	2,014	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,701.80	15	\$813.54	15%	50%	\$0.04	378	391	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	3,264.07	18	\$1,952.48	15%	50%	\$0.04	715	760	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	1,145.81	3	\$108.42	15%	50%	\$0.01	255	263	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	3,356.59	15	\$1,627.09	15%	50%	\$0.04	742	775	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	461.27	3	\$1,138.51	5%	39%	\$0.02	2,650	514	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	1,579.43	3	\$1,052.67	0%	5%	\$0.00	258	260	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	542.15	10	\$4,830.26	15%	24%	\$0.02	163	166	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$35.81	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	4,313.36	1	\$28.01	15%	75%	\$0.00	1,239	1,239	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	1,375.97	10	\$131.69	15%	75%	\$0.01	392	392	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	780.11	20	\$157.19	15%	75%	\$0.01	221	221	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	New	554.59	3	\$1,138.51	5%	39%	\$0.02	1,501	625	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$6,403.27	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	419.13	10	\$100.61	15%	75%	\$0.01	119	119	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	8,229.53	10	\$4,855.90	15%	75%	\$0.04	2,300	2,326	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	517.73	10	\$539.16	15%	75%	\$0.04	140	140	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	4,496.56	10	\$4,935.19	15%	75%	\$0.04	1,214	1,214	6th Plan
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$47.24	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$24.39	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$143.25	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$4,909.41	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,050.02	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$35.12	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,567.30	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$15,400.88	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$146.46	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$2,929.76	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	888.66	5	\$1,492.19	15%	75%	\$0.12	1,016	1,016	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,704.56	15	\$813.54	15%	50%	\$0.04	279	286	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	3,277.77	18	\$1,952.48	15%	50%	\$0.04	536	548	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	1,146.28	3	\$108.42	15%	50%	\$0.01	188	192	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	3,364.93	15	\$1,627.09	15%	50%	\$0.04	551	563	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	New	1,390.67	3	\$814.38	0%	5%	\$0.00	133	133	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	121.56	32	\$13,633.19	15%	52%	\$0.29	86	86	6th Plan
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$75,871.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	862.42	3	\$1,052.67	0%	5%	\$0.00	24	32	BEST Simulation
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	297.61	10	\$4,830.26	15%	24%	\$0.02	15	18	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	315.89	15	\$68.14	15%	35%	\$0.01	35	41	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	9,570.52	20	\$11,495.83	100%	at stock turnover	\$0.09	720	721	BEST Simulation
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$51,861.36	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	320.64	3	\$814.38	0%	5%	\$0.00	7	8	BEST Simulation
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	30.24	32	\$13,633.19	15%	52%	\$0.29	5	5	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	117.49	15	\$32.61	15%	35%	\$0.02	11	11	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	5,645.09	20	\$7,237.97	100%	at stock turnover	\$0.10	295	297	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	47,444.52	23	\$77,823.81	2%	at stock turnover	\$0.09	315	305	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	26,069.62	23	\$10,594.15	6%	at stock turnover	\$0.03	381	383	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,045.26	10	\$3,084.37	15%	45%	\$0.02	76	86	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,148.58	15	\$1,376.22	15%	60%	\$0.05	22	25	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	624.94	15	\$545.73	15%	75%	\$0.06	9	10	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	22,571.46	15	\$171,819.64	15%	50%	\$0.50	476	545	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	19,945.28	12	\$36,600.99	15%	50%	\$0.13	426	515	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	Existing	5,904.14	15	\$33,914.94	20%	50%	\$0.12	109	122	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	45,792.50	23	\$70,098.75	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	18,969.89	18	\$22,156.83	15%	75%	\$0.07	103	126	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,205.27	18	\$1,762.09	15%	25%	\$0.05	7	9	BEST Simulation
Food Mfg	Cooling	HVAC - Economizer	per Facility	Existing	7,996.33	10	\$14,542.21	18%	30%	\$0.04	93	35	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	14,560.22	45	\$133,431.67	15%	25%	\$0.14	90	101	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,478.55	20	\$3,374.37	15%	25%	\$0.06	21	24	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,122.61	45	\$16,830.81	45%	50%	\$0.06	3	4	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	37,173.07	23	\$79,848.96	5%	at stock turnover	\$0.17	102	103	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	Existing	5,404.93	3	\$2,451.29	0%	18%	\$0.01	60	72	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$91.28	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,832.99	10	\$3,166.48	15%	24%	\$0.02	11	12	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	38,051.23	23	\$16,029.41	3%	at stock turnover	\$0.03	285	283	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,719.72	10	\$3,100.75	15%	45%	\$0.02	35	44	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,235.73	4	\$1,865.82	15%	50%	\$0.01	55	67	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,564.11	15	\$1,702.91	15%	60%	\$0.04	12	16	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	546.73	15	\$495.94	15%	75%	\$0.06	4	5	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	36,243.93	23	\$59,105.68	2%	at stock turnover	\$0.09	341	328	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	17,143.91	23	\$37.90	6%	at stock turnover	\$0.00	378	382	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	10,018.50	10	\$3,116.03	15%	45%	\$0.02	52	55	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,286.87	15	\$924.17	15%	60%	\$0.05	10	11	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,212.22	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	10,633.88	15	\$171,819.64	15%	50%	\$1.00	178	185	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	11,136.05	12	\$25,018.67	15%	50%	\$0.14	187	194	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	New	3,305.68	15	\$27,053.73	20%	50%	\$0.11	48	49	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	34,955.91	23	\$53,238.65	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	12,377.47	18	\$16,641.70	15%	75%	\$0.08	51	55	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	948.83	18	\$873.29	15%	25%	\$0.06	4	5	BEST Simulation
Food Mfg	Cooling	HVAC - Economizer	per Facility	New	4,314.27	10	\$9,040.40	18%	30%	\$0.05	55	28	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,135.03	45	\$91,813.01	15%	25%	\$0.13	5	6	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,828.16	20	\$1,290.18	15%	25%	\$0.09	9	9	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.35	45	\$2,038.78	45%	50%	\$0.05	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	New	22,111.02	23	\$47,267.20	5%	at stock turnover	\$0.17	95	97	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	New	3,011.96	3	\$2,038.12	0%	18%	\$0.01	26	27	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$244.58	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	New	258.79	32	\$9,476.50	15%	52%	\$0.30	5	5	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	24,782.21	23	\$12,152.47	3%	at stock turnover	\$0.04	278	278	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,766.66	10	\$2,016.94	15%	45%	\$0.02	15	16	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,649.94	4	\$1,214.18	15%	50%	\$0.01	23	24	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,027.05	15	\$823.28	15%	60%	\$0.05	4	4	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$2,395.82	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	106.75	15	\$33,914.94	20%	50%	\$0.12	26	43	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	351.76	5	\$65.95	15%	25%	\$0.01	29	58	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.14	10	\$154.83	33%	60%	\$0.06	31	64	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,858.28	10	\$1,056.73	15%	30%	\$0.03	233	464	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	1,225	1,259	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	620	634	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	794	2,072	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$2,451.29	0%	18%	\$0.01	15	34	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	34.86	10	\$3,166.48	15%	24%	\$0.02	3	4	6th Plan
Food Mfg	Exterior Lighting	Energy Management System	per Facility	New	93.00	15	\$27,053.73	20%	50%	\$0.11	17	26	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	305.27	5	\$65.73	15%	25%	\$0.01	19	29	Illinois TRM
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.14	10	\$94.78	44%	60%	\$0.03	13	19	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,613.49	10	\$1,051.71	15%	30%	\$0.03	153	226	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	1,296	1,438	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	657	719	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	838	1,911	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$2,038.12	0%	18%	\$0.01	10	15	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.56	32	\$9,476.50	15%	52%	\$0.30	2	3	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,297.07	23	\$55,407.08	2%	at stock turnover	\$0.09	28	27	BEST Simulation
Food Mfg	Heating	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$36,600.99	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	Existing	14,309.91	15	\$33,914.94	20%	50%	\$0.12	293	297	BEST Simulation
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,213.23	23	\$42,642.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	2,495.28	18	\$22,156.83	15%	75%	\$0.07	15	16	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,460.94	18	\$1,762.09	15%	25%	\$0.05	10	10	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	57,754.00	45	\$133,431.67	15%	25%	\$0.14	397	399	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	684.97	20	\$3,374.37	15%	25%	\$0.06	5	5	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	21,714.57	45	\$16,830.81	45%	50%	\$0.06	75	75	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Heating	Strategic Energy Management	per Facility	Existing	12,633.63	3	\$2,451.29	0%	18%	\$0.01	157	158	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$91.28	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	4,345.64	10	\$3,166.48	15%	24%	\$0.02	28	28	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,623.73	23	\$48,860.36	2%	at stock turnover	\$0.09	62	59	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$25,018.67	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	New	13,567.37	15	\$27,053.73	20%	50%	\$0.11	205	205	BEST Simulation
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,801.39	23	\$32,385.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	New	1,557.04	18	\$16,641.70	15%	75%	\$0.08	7	7	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-17.50	18	\$873.29	15%	25%	\$0.06	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	54,947.84	45	\$91,813.01	15%	25%	\$0.13	277	277	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,113.90	20	\$1,290.18	15%	25%	\$0.09	-6	-6	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	3,141.93	45	\$2,038.78	45%	50%	\$0.05	8	8	BEST Simulation
Food Mfg	Heating	Strategic Energy Management	per Facility	New	11,967.93	3	\$2,038.12	0%	18%	\$0.01	109	109	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$244.58	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,102.23	32	\$9,476.50	15%	52%	\$0.30	21	21	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	Existing	577.32	15	\$33,914.94	20%	50%	\$0.12	142	231	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	9,367	9,662	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,336.09	5	\$447.89	5%	40%	\$0.01	230	449	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,016.85	5	\$597.26	15%	50%	\$0.01	293	585	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,602.67	12	\$4,015.97	3%	25%	\$0.06	653	1,307	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	622.90	16	\$74.03	1%	3%	\$0.01	11	21	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	3,989.04	10	\$2,337.52	7%	60%	\$0.03	1,339	2,492	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$26,860.47	15%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,374.72	8	\$347.00	7%	15%	\$0.01	103	187	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.78	10%	25%	\$0.00	7	23	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	4,803	5,156	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	813	2,331	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.43	3	\$2,451.29	0%	18%	\$0.01	95	187	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	199.56	10	\$3,166.48	15%	24%	\$0.02	16	25	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	New	537.88	15	\$27,053.73	20%	50%	\$0.11	104	150	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	9,907	11,037	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,820.34	5	\$447.46	5%	40%	\$0.01	148	199	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,533.81	5	\$596.61	15%	50%	\$0.01	190	278	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,350.27	12	\$3,775.32	4%	25%	\$0.05	444	641	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	558.60	16	\$73.59	1%	3%	\$0.01	7	11	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,593.09	10	\$2,403.03	22%	60%	\$0.03	527	759	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$26,860.47	18%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,234.34	8	\$337.83	7%	15%	\$0.01	67	96	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.73	5	\$18.56	10%	25%	\$0.00	4	8	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	5,089	5,571	AEO 2013
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	859	2,149	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	537.40	3	\$2,038.12	0%	18%	\$0.01	63	91	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.71	32	\$9,476.50	15%	52%	\$0.30	10	15	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$27.30	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,257.49	3	\$2,074.59	10%	37%	\$0.02	531	528	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,970.13	3	\$2,451.29	0%	18%	\$0.01	304	307	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	677.67	10	\$3,166.48	15%	24%	\$0.02	54	55	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$27.30	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	New	2,262.27	3	\$2,074.59	10%	37%	\$0.02	360	358	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,970.13	3	\$2,038.12	0%	18%	\$0.01	206	208	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	183.96	32	\$9,476.50	15%	52%	\$0.30	40	40	6th Plan
Food Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	7,036.50	10	\$214.23	15%	75%	\$0.00	1,877	1,877	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	7,179.53	15	\$3,662.20	15%	50%	\$0.03	1,044	1,173	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,829.92	15	\$601.19	15%	38%	\$0.02	175	187	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	214.15	5	\$36.91	15%	50%	\$0.01	32	34	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	3,345.90	20	\$2,583.63	15%	50%	\$0.05	480	553	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,832.33	15	\$605.78	15%	38%	\$0.02	178	188	MI - TRM
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	3,893.04	10	\$1,344.77	15%	50%	\$0.02	582	622	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,637.83	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	3,067.06	15	\$1,424.92	8%	38%	\$0.03	400	425	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,759.35	3	\$151.99	8%	38%	\$0.01	228	239	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	5,024.38	15	\$2,279.86	8%	38%	\$0.03	628	692	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$436.76	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	18,529.83	10	\$1,605.30	8%	38%	\$0.01	2,448	2,472	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	Existing	6,239.24	15	\$468.20	8%	38%	\$0.01	832	832	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	Existing	3,195.28	3	\$133.21	8%	38%	\$0.00	410	426	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	9,535.17	10	\$1,198.68	8%	38%	\$0.01	1,218	1,272	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	714.80	8	\$981.61	10%	50%	\$0.10	486	518	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	507.16	8	\$348.09	5%	25%	\$0.05	172	184	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$171.64	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,904.91	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$7.21	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	12,960.32	17	\$885.52	5%	6%	\$0.01	230	230	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,036.02	10	\$416.01	15%	36%	\$0.02	735	769	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	12,420.25	17	\$5,643.10	25%	44%	\$0.03	4,032	4,197	RSMean 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,552.84	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,234.05	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	8,587.79	10	\$1,084.90	8%	38%	\$0.01	1,134	1,145	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	Existing	8,674.87	15	\$1,322.71	8%	38%	\$0.01	1,157	1,157	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	4,521.82	3	\$376.26	8%	38%	\$0.01	587	603	Scaled from Optimization
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	13,967.12	12	\$3,674.42	8%	38%	\$0.02	1,796	1,863	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	Existing	4,886.56	3	\$2,074.59	10%	37%	\$0.02	2,399	2,346	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	Existing	4,388.98	3	\$2,451.29	0%	18%	\$0.01	1,360	1,439	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$716.06	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	1,497.24	10	\$3,166.48	15%	24%	\$0.02	241	250	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$721.74	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Commissioning	per Facility	New	4,313.05	3	\$2,074.59	10%	37%	\$0.02	1,971	1,885	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	7,036.50	10	\$214.23	15%	75%	\$0.00	1,372	1,372	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	7,222.25	15	\$3,662.20	15%	50%	\$0.03	807	814	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,813.68	15	\$601.19	15%	38%	\$0.02	131	132	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	212.39	5	\$36.91	15%	50%	\$0.01	24	24	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	3,372.35	20	\$2,583.63	15%	50%	\$0.05	376	379	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,816.70	15	\$605.78	15%	38%	\$0.02	131	132	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	3,861.42	10	\$1,344.77	15%	50%	\$0.02	433	437	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,637.83	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	New	3,120.24	15	\$1,424.92	8%	38%	\$0.03	300	302	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	1,762.25	3	\$151.99	8%	38%	\$0.01	170	171	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	4,923.47	15	\$2,279.86	8%	38%	\$0.03	472	476	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$436.76	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	18,453.73	10	\$1,605.30	8%	38%	\$0.01	1,798	1,798	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	New	6,242.73	15	\$468.20	8%	38%	\$0.01	608	609	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	New	3,144.03	3	\$133.21	8%	38%	\$0.00	306	306	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	9,362.40	10	\$1,198.68	8%	38%	\$0.01	910	910	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	629.39	8	\$981.61	10%	50%	\$0.11	407	407	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	446.57	8	\$348.09	5%	25%	\$0.06	144	144	Developed from RTF
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$171.64	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,904.91	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$7.21	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	11,480.31	17	\$885.52	5%	6%	\$0.01	187	186	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,760.35	10	\$416.01	15%	36%	\$0.02	594	599	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	11,165.66	17	\$3,385.73	25%	44%	\$0.02	3,410	3,440	RSMMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,552.84	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,234.05	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	8,552.52	10	\$1,084.90	8%	38%	\$0.01	833	833	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	New	8,673.02	15	\$1,322.71	8%	38%	\$0.01	846	846	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	New	4,476.39	3	\$376.26	8%	38%	\$0.01	434	436	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	13,646.66	12	\$3,674.42	8%	38%	\$0.02	1,315	1,326	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	New	3,899.51	3	\$2,038.12	0%	18%	\$0.01	1,127	1,139	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$716.06	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	New	349.87	32	\$9,476.50	15%	52%	\$0.30	210	210	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$721.74	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$505.76	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$5.68	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$27.08	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$32.32	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$2,508.72	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$20.75	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$997.33	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$110.72	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,013.71	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$52.63	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$9.61	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$56.12	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$1,923.47	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,460.85	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$59.18	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,857.04	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$25,999.62	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	Existing	85.42	5	\$23.15	15%	75%	\$0.02	23	23	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	846.84	10	\$464.49	15%	75%	\$0.04	224	226	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,780.55	5	\$2,519.21	15%	75%	\$0.11	2,329	2,375	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	6,642.33	15	\$3,280.47	15%	50%	\$0.04	1,035	1,046	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Refrigeration - System Controls	per Facility	Existing	13,102.02	18	\$7,872.96	15%	50%	\$0.04	1,960	2,071	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	4,599.25	3	\$437.41	15%	50%	\$0.01	699	716	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	13,661.97	15	\$6,560.72	15%	50%	\$0.04	2,033	2,133	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	Existing	1,042.40	3	\$2,074.59	10%	37%	\$0.02	3,256	626	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	Existing	2,695.33	3	\$2,451.29	0%	18%	\$0.01	1,057	1,079	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	Existing	923.94	10	\$3,166.48	15%	24%	\$0.02	188	193	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$505.76	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$5.68	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$27.08	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$32.32	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	New	1,608.70	3	\$2,074.59	10%	37%	\$0.02	2,342	978	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$2,508.72	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$20.75	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$997.33	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$110.72	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,013.71	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$52.63	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$9.61	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$56.12	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$1,923.47	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,460.85	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$59.18	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,857.04	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$25,999.62	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$23.15	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$464.49	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	New	2,163.20	5	\$2,519.21	15%	75%	\$0.09	1,683	1,683	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	6,671.93	15	\$3,280.47	15%	50%	\$0.04	765	757	Developed from RTF
Food Mfg	Process	Refrigeration - System Controls	per Facility	New	13,171.18	18	\$7,872.96	15%	50%	\$0.04	1,468	1,494	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	New	4,606.11	3	\$437.41	15%	50%	\$0.01	515	524	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	13,698.89	15	\$6,560.72	15%	50%	\$0.04	1,509	1,557	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	New	3,275.98	3	\$2,038.12	0%	18%	\$0.01	755	767	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	New	292.36	32	\$9,476.50	15%	52%	\$0.30	141	141	6th Plan
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$36,600.99	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	415.48	3	\$2,451.29	0%	18%	\$0.01	28	38	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	142.92	10	\$3,166.48	15%	24%	\$0.02	5	6	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	152.66	15	\$32.98	15%	35%	\$0.01	11	14	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,616.93	20	\$5,545.73	100%	at stock turnover	\$0.09	236	236	BEST Simulation
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$25,018.67	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	New	154.68	3	\$2,038.12	0%	18%	\$0.01	9	9	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	14.54	32	\$9,476.50	15%	52%	\$0.30	2	2	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	56.48	15	\$15.72	15%	35%	\$0.02	4	4	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,723.26	20	\$3,491.68	100%	at stock turnover	\$0.10	97	97	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	65,907.14	23	\$108,108.26	2%	at stock turnover	\$0.09	216	209	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	36,214.39	23	\$14,716.77	6%	at stock turnover	\$0.03	262	263	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	15,413.46	10	\$4,284.71	15%	45%	\$0.02	52	59	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,998.29	15	\$1,911.70	15%	60%	\$0.05	15	17	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	872.09	15	\$758.10	15%	75%	\$0.06	6	7	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	31,497.23	15	\$124,472.34	15%	50%	\$0.26	328	376	BEST Simulation

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Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	Existing	27,832.78	12	\$50,844.13	15%	50%	\$0.13	294	356	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	Existing	8,238.98	15	\$46,585.85	20%	50%	\$0.12	75	84	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	63,612.24	23	\$97,377.05	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	Existing	26,471.83	18	\$30,779.06	15%	75%	\$0.07	71	87	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,681.92	18	\$2,447.84	15%	25%	\$0.05	5	6	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	Existing	11,158.62	10	\$20,201.28	18%	30%	\$0.04	64	24	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	20,318.21	45	\$185,355.26	15%	25%	\$0.14	62	69	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	Existing	4,854.21	20	\$4,687.65	15%	25%	\$0.06	15	17	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,566.57	45	\$23,380.33	45%	50%	\$0.06	2	3	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	Existing	51,638.64	23	\$110,921.48	5%	at stock turnover	\$0.17	70	70	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	Existing	7,508.21	3	\$727.72	0%	5%	\$0.00	12	14	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$132.10	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	Existing	2,557.88	10	\$3,345.00	15%	24%	\$0.02	7	8	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	52,858.52	23	\$22,267.11	3%	at stock turnover	\$0.03	196	195	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	14,958.93	10	\$4,307.33	15%	45%	\$0.02	24	30	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	19,865.50	4	\$2,591.80	15%	50%	\$0.01	38	46	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,578.10	15	\$2,365.42	15%	60%	\$0.04	9	11	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	762.93	15	\$689.12	15%	75%	\$0.06	2	3	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	50,347.94	23	\$82,106.14	2%	at stock turnover	\$0.09	234	225	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	23,815.32	23	\$214.08	6%	at stock turnover	\$0.00	259	262	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	13,965.53	10	\$4,328.69	15%	45%	\$0.02	36	38	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,793.86	15	\$1,283.96	15%	60%	\$0.05	7	7	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,756.34	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	14,823.04	15	\$124,472.34	15%	50%	\$0.52	123	128	BEST Simulation
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	New	15,523.17	12	\$34,754.33	15%	50%	\$0.14	129	134	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	New	4,607.98	15	\$37,056.78	20%	50%	\$0.11	33	34	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	48,558.70	23	\$73,956.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	New	17,253.61	18	\$23,117.72	15%	75%	\$0.08	35	38	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,322.64	18	\$1,213.08	15%	25%	\$0.06	3	3	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	New	6,013.96	10	\$12,558.45	18%	30%	\$0.05	38	19	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,582.19	45	\$127,541.12	15%	25%	\$0.13	4	4	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	New	2,548.39	20	\$1,792.10	15%	25%	\$0.09	6	6	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.88	45	\$2,832.27	45%	50%	\$0.05	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	New	30,715.33	23	\$65,660.81	5%	at stock turnover	\$0.17	66	66	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	New	4,184.03	3	\$568.10	0%	5%	\$0.00	5	5	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$354.37	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	New	360.74	32	\$9,510.40	15%	52%	\$0.30	3	3	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	34,425.98	23	\$16,881.50	3%	at stock turnover	\$0.04	191	191	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,038.43	10	\$2,801.89	15%	45%	\$0.02	10	11	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	10,663.68	4	\$1,686.58	15%	50%	\$0.01	16	17	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,431.65	15	\$1,143.79	15%	60%	\$0.05	3	3	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$3,471.24	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$46,585.85	20%	50%	\$0.12	13	21	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$65.97	15%	25%	\$0.01	15	29	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.72	33%	60%	\$0.06	15	32	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.78	15%	30%	\$0.03	116	230	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	606	622	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	307	313	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	392	1,024	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$727.72	0%	5%	\$0.00	2	5	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$3,345.00	15%	24%	\$0.02	1	2	6th Plan
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$37,056.78	20%	50%	\$0.11	9	13	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.81	15%	25%	\$0.01	10	14	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.76	44%	60%	\$0.03	6	9	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.72	15%	30%	\$0.03	76	112	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	640	711	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	325	356	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	414	945	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$568.10	0%	5%	\$0.00	1	2	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$9,510.40	15%	52%	\$0.30	1	1	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	5,969.24	23	\$76,968.26	2%	at stock turnover	\$0.09	19	18	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$50,844.13	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	Existing	19,969.41	15	\$46,585.85	20%	50%	\$0.12	202	205	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,685.35	23	\$59,235.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	Existing	3,482.14	18	\$30,779.06	15%	75%	\$0.07	10	11	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,038.73	18	\$2,447.84	15%	25%	\$0.05	7	7	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	Existing	80,595.62	45	\$185,355.26	15%	25%	\$0.14	274	275	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	Existing	955.87	20	\$4,687.65	15%	25%	\$0.06	3	3	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	30,302.67	45	\$23,380.33	45%	50%	\$0.06	52	52	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	Existing	17,549.89	3	\$727.72	0%	5%	\$0.00	30	30	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$132.10	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	Existing	6,064.34	10	\$3,345.00	15%	24%	\$0.02	19	19	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,201.30	23	\$67,873.94	2%	at stock turnover	\$0.09	42	40	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$34,754.33	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	New	18,912.82	15	\$37,056.78	20%	50%	\$0.11	141	142	BEST Simulation
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,669.81	23	\$44,988.44	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	New	2,170.50	18	\$23,117.72	15%	75%	\$0.08	5	5	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-24.40	18	\$1,213.08	15%	25%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	New	76,597.09	45	\$127,541.12	15%	25%	\$0.13	191	191	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	New	-1,552.78	20	\$1,792.10	15%	25%	\$0.09	-4	-4	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,379.83	45	\$2,832.27	45%	50%	\$0.05	5	5	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	New	16,625.14	3	\$568.10	0%	5%	\$0.00	21	21	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$354.37	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	New	1,536.50	32	\$9,510.40	15%	52%	\$0.30	14	14	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$46,585.85	20%	50%	\$0.12	71	115	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	4,631	4,777	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,248.17	5	\$448.02	5%	40%	\$0.01	108	216	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,128.76	5	\$597.37	15%	50%	\$0.01	152	297	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,016.08	3%	25%	\$0.06	324	649	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$73.88	1%	3%	\$0.01	5	11	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.57	7%	60%	\$0.03	665	1,237	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$19,458.69	15%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.09	7%	15%	\$0.01	51	93	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.67	10%	25%	\$0.00	3	11	AEG research & analysis
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	2,374	2,549	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	402	1,152	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$727.72	0%	5%	\$0.00	13	26	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$3,345.00	15%	24%	\$0.02	8	12	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$37,056.78	20%	50%	\$0.11	52	74	BEST Simulation
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	4,898	5,456	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,826.52	5	\$447.55	5%	40%	\$0.01	73	99	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,542.44	5	\$596.73	15%	50%	\$0.01	94	138	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.30	4%	25%	\$0.05	220	318	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	557.87	16	\$73.72	1%	3%	\$0.01	4	5	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,402.91	22%	60%	\$0.03	261	377	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$19,458.69	18%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.92	7%	15%	\$0.01	33	48	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.51	5	\$18.67	10%	25%	\$0.00	2	4	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	2,516	2,754	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	425	1,063	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	New	537.91	3	\$568.10	0%	5%	\$0.00	9	13	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$9,510.40	15%	52%	\$0.30	5	7	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$39.55	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	Existing	1,652.79	3	\$855.55	5%	39%	\$0.01	241	240	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,435.83	3	\$727.72	0%	5%	\$0.00	31	31	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	496.15	10	\$3,345.00	15%	24%	\$0.02	20	20	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$39.55	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	New	1,654.51	3	\$855.55	5%	39%	\$0.01	163	163	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	New	1,435.83	3	\$568.10	0%	5%	\$0.00	21	21	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	New	134.25	32	\$9,510.40	15%	52%	\$0.30	14	14	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	7,091.84	10	\$215.94	15%	75%	\$0.00	935	935	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	7,268.88	15	\$3,690.98	15%	50%	\$0.03	521	587	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,841.18	15	\$606.07	15%	38%	\$0.02	89	93	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	216.82	5	\$37.18	15%	50%	\$0.01	16	17	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	3,362.86	20	\$2,603.83	15%	50%	\$0.05	240	276	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,866.70	15	\$610.50	15%	38%	\$0.02	90	94	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	3,939.12	10	\$1,355.31	15%	50%	\$0.02	291	311	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$593.25	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	Existing	3,179.35	15	\$1,436.15	8%	38%	\$0.03	200	216	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,774.95	3	\$153.14	8%	38%	\$0.01	115	119	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	5,012.86	15	\$2,297.71	8%	38%	\$0.03	314	343	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$158.20	15%	50%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	12,338.13	10	\$1,070.70	8%	38%	\$0.01	806	814	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	Existing	4,154.41	15	\$312.29	8%	38%	\$0.01	274	274	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	Existing	2,127.59	3	\$88.91	8%	38%	\$0.00	135	140	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	6,349.03	10	\$799.55	8%	38%	\$0.01	401	419	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	341.70	8	\$501.02	10%	50%	\$0.11	114	123	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	242.44	8	\$177.66	5%	25%	\$0.05	40	44	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$248.69	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,388.37	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$5.22	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	6,262.39	17	\$451.98	5%	6%	\$0.01	55	55	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	978.34	10	\$212.31	15%	36%	\$0.02	176	183	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	Existing	5,985.88	17	\$2,880.52	25%	44%	\$0.04	955	1,000	RSMears 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,860.44	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$899.37	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	1,767.18	10	\$223.70	8%	38%	\$0.01	115	117	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	Existing	1,785.10	15	\$272.74	8%	38%	\$0.01	118	118	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	Existing	933.06	3	\$77.52	8%	38%	\$0.01	60	62	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	2,892.33	12	\$757.47	8%	38%	\$0.02	186	191	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	Existing	2,348.91	3	\$855.55	5%	39%	\$0.01	706	702	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	Existing	2,169.76	3	\$727.72	0%	5%	\$0.00	94	96	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$521.90	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	Existing	728.07	10	\$3,345.00	15%	24%	\$0.02	58	60	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$321.94	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	New	2,178.59	3	\$855.55	5%	39%	\$0.01	606	592	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	New	7,091.84	10	\$215.94	15%	75%	\$0.00	684	684	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	7,304.27	15	\$3,690.98	15%	50%	\$0.03	403	407	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessiccant Dryer	per Facility	New	1,823.52	15	\$606.07	15%	38%	\$0.02	66	66	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	214.81	5	\$37.18	15%	50%	\$0.01	12	12	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	New	3,410.63	20	\$2,603.83	15%	50%	\$0.05	188	190	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,848.15	15	\$610.50	15%	38%	\$0.02	66	66	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	3,905.32	10	\$1,355.31	15%	50%	\$0.02	216	218	VT - TRM
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$593.25	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	New	3,155.70	15	\$1,436.15	8%	38%	\$0.03	146	151	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	New	1,782.30	3	\$153.14	8%	38%	\$0.01	86	86	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	4,979.41	15	\$2,297.71	8%	38%	\$0.03	239	238	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$158.20	15%	50%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	12,292.53	10	\$1,070.70	8%	38%	\$0.01	592	592	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	New	4,158.44	15	\$312.29	8%	38%	\$0.01	200	200	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	New	2,094.33	3	\$88.91	8%	38%	\$0.00	101	101	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	New	6,236.57	10	\$799.55	8%	38%	\$0.01	299	299	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	317.23	8	\$501.02	10%	50%	\$0.11	101	101	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	225.08	8	\$177.66	5%	25%	\$0.06	36	36	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$248.69	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,388.37	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$5.22	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	5,815.60	17	\$451.98	5%	6%	\$0.01	47	47	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	896.58	10	\$212.31	15%	36%	\$0.02	151	151	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	New	5,686.85	17	\$1,728.34	25%	44%	\$0.02	866	866	RSMeans 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,860.44	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$899.37	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	1,760.65	10	\$223.70	8%	38%	\$0.01	85	85	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	New	1,785.45	15	\$272.74	8%	38%	\$0.01	86	86	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	New	925.98	3	\$77.52	8%	38%	\$0.01	45	45	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	New	2,822.91	12	\$757.47	8%	38%	\$0.02	136	136	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	New	2,025.46	3	\$568.10	0%	5%	\$0.00	81	81	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$521.90	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	New	176.34	32	\$9,510.40	15%	52%	\$0.30	52	52	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$321.94	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$104.25	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$10.92	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$51.26	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$61.22	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$3,634.66	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$39.23	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,889.71	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$209.77	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,920.56	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$24.20	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$13.76	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	Existing	0.00	10	\$81.32	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$2,786.71	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$693.55	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$11.87	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,313.86	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$5,209.87	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	Existing	139.69	5	\$38.13	15%	75%	\$0.02	18	18	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,393.14	10	\$761.89	15%	75%	\$0.04	182	184	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	Existing	364.42	5	\$504.82	15%	75%	\$0.11	236	240	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	367.40	15	\$175.60	15%	50%	\$0.04	27	28	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	Existing	704.67	18	\$421.45	15%	50%	\$0.04	52	55	AEG study for State of New Mexico

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Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	Existing	247.37	3	\$23.41	15%	50%	\$0.01	19	19	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	724.65	15	\$351.21	15%	50%	\$0.04	54	56	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	Existing	147.19	3	\$855.55	5%	39%	\$0.01	278	55	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	Existing	540.10	3	\$727.72	0%	5%	\$0.00	30	30	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	Existing	186.46	10	\$3,345.00	15%	24%	\$0.02	19	19	6th Plan
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$104.25	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$10.92	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$51.26	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$61.22	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	New	186.36	3	\$855.55	5%	39%	\$0.01	165	71	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$3,634.66	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$39.23	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,889.71	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$209.77	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,920.56	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$24.20	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$13.76	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	New	0.00	10	\$81.32	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	New	0.00	10	\$2,786.71	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$693.55	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$11.87	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,313.86	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$5,209.87	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$38.13	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$761.89	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	New	353.08	5	\$504.82	15%	75%	\$0.11	136	136	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	367.99	15	\$175.60	15%	50%	\$0.04	20	21	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	New	707.63	18	\$421.45	15%	50%	\$0.04	39	40	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	New	247.47	3	\$23.41	15%	50%	\$0.01	14	14	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	726.45	15	\$351.21	15%	50%	\$0.04	40	41	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	New	522.28	3	\$568.10	0%	5%	\$0.00	17	17	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	New	47.72	32	\$9,510.40	15%	52%	\$0.30	11	11	6th Plan
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$50,844.13	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	Existing	577.94	3	\$727.72	0%	5%	\$0.00	5	7	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	Existing	199.44	10	\$3,345.00	15%	24%	\$0.02	3	4	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	211.69	15	\$45.72	15%	35%	\$0.01	8	9	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,413.57	20	\$7,703.80	100%	at stock turnover	\$0.09	162	162	BEST Simulation
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$34,754.33	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	New	214.87	3	\$568.10	0%	5%	\$0.00	2	2	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	New	20.26	32	\$9,510.40	15%	52%	\$0.30	1	1	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	78.74	15	\$21.83	15%	35%	\$0.02	2	3	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,782.99	20	\$4,850.44	100%	at stock turnover	\$0.10	66	67	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	27,676.66	23	\$45,398.35	2%	at stock turnover	\$0.09	8	8	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	15,207.66	23	\$6,180.07	6%	at stock turnover	\$0.03	9	9	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	6,483.95	10	\$1,799.31	15%	45%	\$0.02	2	2	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,250.73	15	\$802.57	15%	60%	\$0.05	1	1	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	363.79	15	\$318.38	15%	75%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	13,139.44	15	\$474,429.34	15%	50%	\$2.37	12	13	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	11,610.62	12	\$21,351.13	15%	50%	\$0.13	10	13	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	Existing	3,436.94	15	\$20,348.36	20%	50%	\$0.12	3	3	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	26,712.95	23	\$40,891.95	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	11,042.79	18	\$12,925.00	15%	75%	\$0.07	3	3	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	701.61	18	\$1,028.09	15%	25%	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	Existing	4,654.83	10	\$8,483.41	18%	30%	\$0.04	2	1	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	8,475.84	45	\$77,837.04	15%	25%	\$0.14	2	2	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,024.94	20	\$1,968.75	15%	25%	\$0.06	1	1	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	653.50	45	\$9,818.42	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	Existing	21,684.83	23	\$46,579.72	5%	at stock turnover	\$0.17	3	3	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	Existing	3,108.48	3	\$2,464.40	0%	24%	\$0.01	2	2	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$671.12	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	Existing	1,067.02	10	\$2,408.93	15%	24%	\$0.02	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	22,197.10	23	\$9,350.72	3%	at stock turnover	\$0.03	7	7	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	6,292.70	10	\$1,808.96	15%	45%	\$0.02	1	1	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	8,356.75	4	\$1,088.39	15%	50%	\$0.01	1	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,492.63	15	\$993.12	15%	60%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	318.27	15	\$289.43	15%	75%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	21,142.82	23	\$34,479.17	2%	at stock turnover	\$0.09	8	8	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	10,000.86	23	\$7,666.95	6%	at stock turnover	\$0.06	9	9	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,872.42	10	\$1,818.00	15%	45%	\$0.02	1	1	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	749.49	15	\$539.07	15%	60%	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$8,925.40	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	6,193.35	15	\$474,429.34	15%	50%	\$4.71	4	5	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	New	6,485.80	12	\$14,594.67	15%	50%	\$0.14	5	5	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	New	1,925.28	15	\$16,343.33	20%	50%	\$0.11	1	1	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	20,391.46	23	\$31,056.65	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	New	7,208.83	18	\$9,708.07	15%	75%	\$0.08	1	1	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	552.61	18	\$509.52	15%	25%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	New	2,512.68	10	\$5,273.72	18%	30%	\$0.05	1	1	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	661.06	45	\$53,559.02	15%	25%	\$0.13	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	New	1,064.75	20	\$752.53	15%	25%	\$0.09	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	0.78	45	\$1,189.09	45%	50%	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	New	12,898.42	23	\$27,573.21	5%	at stock turnover	\$0.17	2	2	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	New	1,727.41	3	\$2,143.62	0%	24%	\$0.01	1	1	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,801.12	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	New	150.73	32	\$7,475.82	15%	52%	\$0.32	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	14,456.65	23	\$7,089.12	3%	at stock turnover	\$0.04	7	7	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,380.09	10	\$1,176.43	15%	45%	\$0.02	0	0	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	4,483.99	4	\$708.51	15%	50%	\$0.01	1	1	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	598.17	15	\$480.58	15%	60%	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$17,641.56	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	Existing	106.53	15	\$20,348.36	20%	50%	\$0.12	1	2	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.94	5	\$66.33	15%	25%	\$0.01	1	2	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	137.85	10	\$154.97	33%	60%	\$0.06	1	3	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,854.44	10	\$1,056.43	15%	30%	\$0.03	10	20	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	52	53	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	26	27	AEO 2013
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	34	88	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	101.33	3	\$2,464.40	0%	24%	\$0.01	1	2	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	34.79	10	\$2,408.93	15%	24%	\$0.02	0	0	6th Plan
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	New	92.86	15	\$16,343.33	20%	50%	\$0.11	1	1	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.70	5	\$65.73	15%	25%	\$0.01	1	1	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	124.95	10	\$94.67	44%	60%	\$0.03	1	1	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,610.97	10	\$1,051.61	15%	30%	\$0.03	6	10	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	55	61	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	28	30	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	35	81	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	New	87.81	3	\$2,143.62	0%	24%	\$0.01	1	1	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.55	32	\$7,475.82	15%	52%	\$0.32	0	0	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	2,506.69	23	\$32,321.60	2%	at stock turnover	\$0.09	1	1	BEST Simulation
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$21,351.13	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	Existing	8,330.03	15	\$20,348.36	20%	50%	\$0.12	7	7	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	707.74	23	\$24,875.13	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	Existing	1,452.54	18	\$12,925.00	15%	75%	\$0.07	0	0	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	850.43	18	\$1,028.09	15%	25%	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	33,619.51	45	\$77,837.04	15%	25%	\$0.14	10	10	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	398.73	20	\$1,968.75	15%	25%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	12,640.39	45	\$9,818.42	45%	50%	\$0.06	2	2	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	Existing	7,369.80	3	\$2,464.40	0%	24%	\$0.01	5	5	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$671.12	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	Existing	2,529.66	10	\$2,408.93	15%	24%	\$0.02	1	1	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	3,863.94	23	\$28,502.58	2%	at stock turnover	\$0.09	2	1	BEST Simulation
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,594.67	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	New	7,901.74	15	\$16,343.33	20%	50%	\$0.11	5	5	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	2,800.88	23	\$18,892.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	New	906.83	18	\$9,708.07	15%	75%	\$0.08	0	0	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-10.19	18	\$509.52	15%	25%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	New	32,002.00	45	\$53,559.02	15%	25%	\$0.13	7	7	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	New	-648.75	20	\$752.53	15%	25%	\$0.09	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	1,829.88	45	\$1,189.09	45%	50%	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	New	6,981.46	3	\$2,143.62	0%	24%	\$0.01	4	4	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,801.12	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	New	641.95	32	\$7,475.82	15%	52%	\$0.32	1	1	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	Existing	576.14	15	\$20,348.36	20%	50%	\$0.12	6	10	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	396	409	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,350.60	5	\$448.02	5%	40%	\$0.01	10	19	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,035.56	5	\$597.56	15%	50%	\$0.01	12	25	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,595.25	12	\$4,015.89	3%	25%	\$0.06	28	55	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	622.90	16	\$74.17	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	3,980.77	10	\$2,337.78	7%	60%	\$0.03	57	105	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$74,167.27	15%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,383.29	8	\$347.32	7%	15%	\$0.01	4	8	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.69	10%	25%	\$0.00	0	1	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	203	218	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	34	99	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	580.10	3	\$2,464.40	0%	24%	\$0.01	5	10	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	199.15	10	\$2,408.93	15%	24%	\$0.02	1	1	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	New	537.05	15	\$16,343.33	20%	50%	\$0.11	4	6	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	419	467	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,828.90	5	\$447.42	5%	40%	\$0.01	6	8	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,545.76	5	\$596.96	15%	50%	\$0.01	8	12	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,345.05	12	\$3,775.29	4%	25%	\$0.05	19	27	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	558.60	16	\$73.56	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,587.45	10	\$2,402.90	22%	60%	\$0.03	22	32	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$74,167.27	18%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,240.16	8	\$337.67	7%	15%	\$0.01	3	4	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.73	5	\$18.69	10%	25%	\$0.00	0	0	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	215	236	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	36	91	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	New	521.44	3	\$2,143.62	0%	24%	\$0.01	3	5	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.64	32	\$7,475.82	15%	52%	\$0.32	0	1	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$200.79	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	Existing	2,102.60	3	\$1,656.40	10%	35%	\$0.01	19	19	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,838.84	3	\$2,464.40	0%	24%	\$0.01	16	16	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	631.17	10	\$2,408.93	15%	24%	\$0.02	2	2	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$200.79	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	New	2,108.11	3	\$1,656.40	10%	35%	\$0.01	13	13	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	New	1,838.84	3	\$2,143.62	0%	24%	\$0.01	11	11	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	171.53	32	\$7,475.82	15%	52%	\$0.32	2	2	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	16,359.00	10	\$498.07	15%	75%	\$0.00	185	185	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	16,566.65	15	\$8,514.16	15%	50%	\$0.03	103	115	OH - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Desiccant Dryer	per Facility	Existing	4,254.54	15	\$1,397.72	15%	38%	\$0.02	18	18	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	501.01	5	\$85.62	15%	50%	\$0.01	3	3	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	7,721.02	20	\$6,006.34	15%	50%	\$0.05	47	54	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	4,313.52	15	\$1,408.58	15%	38%	\$0.02	18	19	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	8,932.23	10	\$3,126.48	15%	50%	\$0.02	56	61	VT - TRM
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$3,014.93	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	Existing	7,209.77	15	\$3,312.80	8%	38%	\$0.03	39	42	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	4,090.27	3	\$353.35	8%	38%	\$0.01	23	24	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	11,368.01	15	\$5,300.25	8%	38%	\$0.03	60	67	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$803.78	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	19,983.00	10	\$1,731.17	8%	38%	\$0.01	112	113	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	Existing	6,728.55	15	\$504.70	8%	38%	\$0.01	38	38	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	Existing	3,445.87	3	\$143.51	8%	38%	\$0.00	19	19	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	10,282.95	10	\$1,292.80	8%	38%	\$0.01	56	58	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,150.43	8	\$1,584.04	10%	50%	\$0.10	32	36	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	816.24	8	\$561.98	5%	25%	\$0.05	11	13	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$1,263.86	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,709.47	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$6.63	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	20,693.25	17	\$1,429.08	5%	6%	\$0.01	15	16	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	3,282.21	10	\$671.12	15%	36%	\$0.01	49	54	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	20,207.02	17	\$9,107.50	25%	44%	\$0.03	268	289	RSMean 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,290.74	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,107.69	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$397.97	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$484.80	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$138.08	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$1,347.07	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	Existing	7,928.85	3	\$1,656.40	10%	35%	\$0.01	144	149	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	Existing	7,068.54	3	\$2,464.40	0%	24%	\$0.01	118	136	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$642.78	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	Existing	2,426.33	10	\$2,408.93	15%	24%	\$0.02	16	17	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	134,890.89	10	\$1,956.09	15%	75%	\$0.00	1,523	1,523	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	New	6,538.93	3	\$1,656.40	10%	35%	\$0.01	113	112	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	16,359.00	10	\$498.07	15%	75%	\$0.00	135	135	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	16,763.98	15	\$8,514.16	15%	50%	\$0.03	79	80	OH - TRM
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	4,211.98	15	\$1,397.72	15%	38%	\$0.02	13	13	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	496.17	5	\$85.62	15%	50%	\$0.01	2	2	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	7,768.05	20	\$6,006.34	15%	50%	\$0.05	37	37	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	4,268.87	15	\$1,408.58	15%	38%	\$0.02	13	13	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	8,962.92	10	\$3,126.48	15%	50%	\$0.02	43	43	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$3,014.93	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	New	7,242.54	15	\$3,312.80	8%	38%	\$0.03	29	30	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	New	4,116.79	3	\$353.35	8%	38%	\$0.01	17	17	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	11,428.14	15	\$5,300.25	8%	38%	\$0.03	46	47	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$803.78	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	19,900.94	10	\$1,731.17	8%	38%	\$0.01	82	82	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	New	6,732.30	15	\$504.70	8%	38%	\$0.01	28	28	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	New	3,390.59	3	\$143.51	8%	38%	\$0.00	14	14	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	10,096.63	10	\$1,292.80	8%	38%	\$0.01	42	42	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	952.38	8	\$1,584.04	10%	50%	\$0.11	26	26	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	675.74	8	\$561.98	5%	25%	\$0.06	9	9	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$1,263.86	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,709.47	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$6.63	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	17,247.91	17	\$1,429.08	5%	6%	\$0.01	12	12	E3T Website
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,684.16	10	\$671.12	15%	36%	\$0.02	39	39	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	New	17,024.43	17	\$5,464.26	25%	44%	\$0.02	221	221	RSMMeans 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,290.74	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,107.69	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	3,135.96	10	\$397.97	8%	38%	\$0.01	13	13	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	New	3,180.15	15	\$484.80	8%	38%	\$0.01	13	13	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	New	1,649.29	3	\$138.08	8%	38%	\$0.01	7	7	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	5,027.98	12	\$1,347.07	8%	38%	\$0.02	21	21	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	New	5,781.55	3	\$2,143.62	0%	24%	\$0.01	95	95	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$642.78	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	New	529.43	32	\$7,475.82	15%	52%	\$0.32	13	13	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	134,890.89	10	\$1,956.09	15%	75%	\$0.00	1,113	1,113	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$185.72	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$18.09	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$85.02	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$101.30	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$18,471.27	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$65.12	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$3,127.69	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$347.32	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$3,178.34	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$61.50	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$69.95	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$413.05	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$14,162.33	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,161.95	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$19.90	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,345.97	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$8,731.24	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	Existing	49.38	5	\$13.27	15%	75%	\$0.02	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	492.43	10	\$270.74	15%	75%	\$0.04	6	6	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	Existing	613.59	5	\$845.99	15%	75%	\$0.11	34	35	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	348.06	15	\$169.44	15%	50%	\$0.04	2	2	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	Existing	667.65	18	\$406.41	15%	50%	\$0.04	4	4	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	Existing	238.99	3	\$22.31	15%	50%	\$0.01	2	2	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	686.53	15	\$338.88	15%	50%	\$0.04	5	5	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	Existing	230.46	3	\$1,656.40	10%	35%	\$0.01	27	5	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	Existing	904.65	3	\$2,464.40	0%	24%	\$0.01	20	20	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	Existing	310.52	10	\$2,408.93	15%	24%	\$0.02	3	3	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$185.72	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$18.09	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$85.02	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$101.30	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	New	323.95	3	\$1,656.40	10%	35%	\$0.01	18	8	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$18,471.27	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$65.12	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$3,127.69	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$347.32	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$3,178.34	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$61.50	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$69.95	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Lamps	per Facility	New	0.00	10	\$413.05	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$14,162.33	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,161.95	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$19.90	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,345.97	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$8,731.24	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	New	49.40	5	\$13.27	15%	75%	\$0.02	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	492.15	10	\$270.74	15%	75%	\$0.04	4	4	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	New	723.09	5	\$845.99	15%	75%	\$0.09	24	24	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	347.66	15	\$169.44	15%	50%	\$0.04	2	2	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	New	668.56	18	\$406.41	15%	50%	\$0.04	3	3	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	New	238.99	3	\$22.31	15%	50%	\$0.01	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	686.32	15	\$338.88	15%	50%	\$0.04	3	3	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	New	1,066.12	3	\$2,143.62	0%	24%	\$0.01	14	14	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	New	97.73	32	\$7,475.82	15%	52%	\$0.32	2	2	6th Plan
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$21,351.13	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	Existing	242.37	3	\$2,464.40	0%	24%	\$0.01	1	1	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	83.20	10	\$2,408.93	15%	24%	\$0.02	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	89.05	15	\$19.30	15%	35%	\$0.01	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	2,693.28	20	\$3,235.09	100%	at stock turnover	\$0.09	6	6	BEST Simulation
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,594.67	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	New	90.06	3	\$2,143.62	0%	24%	\$0.01	0	0	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	New	8.47	32	\$7,475.82	15%	52%	\$0.32	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	33.11	15	\$9.04	15%	35%	\$0.02	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,588.61	20	\$2,036.86	100%	at stock turnover	\$0.10	2	2	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	44,571.73	23	\$73,111.53	2%	at stock turnover	\$0.09	289	280	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	24,491.09	23	\$9,952.67	6%	at stock turnover	\$0.03	350	352	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,423.83	10	\$2,897.73	15%	45%	\$0.02	70	79	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,027.68	15	\$1,292.99	15%	60%	\$0.05	20	23	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	589.78	15	\$512.64	15%	75%	\$0.06	8	9	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	21,300.97	15	\$190,438.55	15%	50%	\$0.59	439	503	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	18,822.78	12	\$34,384.95	15%	50%	\$0.13	393	475	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	Existing	5,571.87	15	\$31,943.23	20%	50%	\$0.12	100	113	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	43,019.73	23	\$65,854.23	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	17,902.39	18	\$20,815.12	15%	75%	\$0.07	95	116	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,137.45	18	\$1,655.32	15%	25%	\$0.05	7	8	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	Existing	7,546.36	10	\$13,661.81	18%	30%	\$0.04	85	32	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	13,740.81	45	\$125,352.28	15%	25%	\$0.14	83	93	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,282.81	20	\$3,170.26	15%	25%	\$0.06	20	22	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,059.44	45	\$15,811.63	45%	50%	\$0.06	3	4	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	34,922.22	23	\$75,014.06	5%	at stock turnover	\$0.17	94	94	BEST Simulation
Metal Mfg	Cooling	Strategic Energy Management	per Facility	Existing	5,077.66	3	\$596.88	0%	5%	\$0.00	16	18	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$202.10	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,729.84	10	\$2,768.72	15%	24%	\$0.02	10	11	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	35,747.20	23	\$15,058.82	3%	at stock turnover	\$0.03	262	260	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,116.44	10	\$2,912.97	15%	45%	\$0.02	32	40	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,434.66	4	\$1,752.87	15%	50%	\$0.01	50	62	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,419.80	15	\$1,599.65	15%	60%	\$0.04	11	15	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	515.96	15	\$465.93	15%	75%	\$0.06	3	4	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	34,049.34	23	\$55,526.80	2%	at stock turnover	\$0.09	313	301	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	16,105.84	23	\$35.78	6%	at stock turnover	\$0.00	347	351	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	9,444.62	10	\$2,927.50	15%	45%	\$0.02	48	50	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,213.15	15	\$868.20	15%	60%	\$0.05	9	10	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,687.15	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	10,024.53	15	\$190,438.55	15%	50%	\$1.17	164	171	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	10,498.02	12	\$23,503.72	15%	50%	\$0.14	172	179	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	New	3,116.29	15	\$25,497.18	20%	50%	\$0.11	44	46	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	32,839.31	23	\$50,015.02	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	11,668.28	18	\$15,633.97	15%	75%	\$0.08	47	51	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	894.47	18	\$820.28	15%	25%	\$0.06	4	4	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	New	4,067.13	10	\$8,493.01	18%	30%	\$0.05	51	25	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,070.00	45	\$86,253.56	15%	25%	\$0.13	5	5	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,723.43	20	\$1,211.90	15%	25%	\$0.09	8	8	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.27	45	\$1,915.28	45%	50%	\$0.05	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	New	20,772.19	23	\$44,405.14	5%	at stock turnover	\$0.17	88	89	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Strategic Energy Management	per Facility	New	2,829.58	3	\$489.17	0%	5%	\$0.00	7	7	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$542.17	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	New	243.96	32	\$8,188.28	15%	52%	\$0.31	4	4	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	23,281.63	23	\$11,416.63	3%	at stock turnover	\$0.04	255	255	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,436.23	10	\$1,894.70	15%	45%	\$0.02	13	15	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,211.64	4	\$1,140.50	15%	50%	\$0.01	21	23	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	968.20	15	\$773.57	15%	60%	\$0.05	4	4	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$5,310.88	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$31,943.23	20%	50%	\$0.12	25	42	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.08	15%	25%	\$0.01	29	57	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.66	33%	60%	\$0.06	30	63	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.75	15%	30%	\$0.03	229	456	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	1,197	1,231	AEO 2013
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	606	620	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	776	2,026	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$596.88	0%	5%	\$0.00	4	9	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$2,768.72	15%	24%	\$0.02	3	4	6th Plan
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$25,497.18	20%	50%	\$0.11	17	25	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.84	15%	25%	\$0.01	19	28	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.88	44%	60%	\$0.03	12	18	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.67	15%	30%	\$0.03	150	222	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	1,266	1,406	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	643	703	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	819	1,868	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$489.17	0%	5%	\$0.00	3	4	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$8,188.28	15%	52%	\$0.31	2	3	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,036.88	23	\$52,052.15	2%	at stock turnover	\$0.09	26	25	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$34,384.95	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	Existing	13,504.93	15	\$31,943.23	20%	50%	\$0.12	270	274	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,139.77	23	\$40,060.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	2,354.91	18	\$20,815.12	15%	75%	\$0.07	14	14	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,378.76	18	\$1,655.32	15%	25%	\$0.05	9	9	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	54,505.27	45	\$125,352.28	15%	25%	\$0.14	366	368	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	646.44	20	\$3,170.26	15%	25%	\$0.06	4	4	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	20,493.11	45	\$15,811.63	45%	50%	\$0.06	69	69	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	Existing	11,868.65	3	\$596.88	0%	5%	\$0.00	40	40	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$202.10	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	4,101.19	10	\$2,768.72	15%	24%	\$0.02	26	26	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,222.66	23	\$45,901.84	2%	at stock turnover	\$0.09	57	54	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$23,503.72	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	New	12,790.37	15	\$25,497.18	20%	50%	\$0.11	189	189	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,510.66	23	\$30,424.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	New	1,467.87	18	\$15,633.97	15%	75%	\$0.08	6	7	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-16.50	18	\$820.28	15%	25%	\$0.06	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	51,801.14	45	\$86,253.56	15%	25%	\$0.13	256	256	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,050.11	20	\$1,211.90	15%	25%	\$0.09	-5	-5	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	2,962.00	45	\$1,915.28	45%	50%	\$0.05	7	7	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	New	11,243.26	3	\$489.17	0%	5%	\$0.00	28	28	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$542.17	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,039.10	32	\$8,188.28	15%	52%	\$0.31	19	19	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$31,943.23	20%	50%	\$0.12	139	227	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	9,157	9,446	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,248.17	5	\$448.02	5%	40%	\$0.01	213	427	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,128.76	5	\$597.36	15%	50%	\$0.01	301	588	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,015.96	3%	25%	\$0.06	642	1,283	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$74.06	1%	3%	\$0.01	11	21	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.64	7%	60%	\$0.03	1,315	2,446	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$29,771.15	15%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.09	7%	15%	\$0.01	101	184	CA - DEER
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.64	10%	25%	\$0.00	7	22	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	4,695	5,041	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	795	2,279	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$596.88	0%	5%	\$0.00	26	51	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$2,768.72	15%	24%	\$0.02	16	25	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$25,497.18	20%	50%	\$0.11	102	147	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	9,685	10,790	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,906.83	5	\$447.54	5%	40%	\$0.01	139	204	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,462.13	5	\$596.63	15%	50%	\$0.01	193	263	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.37	4%	25%	\$0.05	436	629	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	557.87	16	\$73.58	1%	3%	\$0.01	7	10	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,402.99	22%	60%	\$0.03	517	745	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$29,771.15	18%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.89	7%	15%	\$0.01	65	94	CA - DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.51	5	\$18.64	10%	25%	\$0.00	4	8	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	4,975	5,446	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	840	2,101	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	537.91	3	\$489.17	0%	5%	\$0.00	17	25	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$8,188.28	15%	52%	\$0.31	10	15	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$60.51	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,350.11	3	\$1,557.54	5%	39%	\$0.02	389	388	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,172.88	3	\$596.88	0%	5%	\$0.00	50	50	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	405.29	10	\$2,768.72	15%	24%	\$0.02	32	32	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$60.51	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	New	1,351.52	3	\$1,557.54	5%	39%	\$0.02	263	263	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,172.88	3	\$489.17	0%	5%	\$0.00	34	34	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	109.66	32	\$8,188.28	15%	52%	\$0.31	23	23	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	1,972.41	10	\$60.03	15%	75%	\$0.00	514	514	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	2,021.65	15	\$1,026.50	15%	50%	\$0.03	287	323	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	515.29	15	\$168.46	15%	38%	\$0.02	49	51	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	60.30	5	\$10.41	15%	50%	\$0.01	9	9	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	942.15	20	\$724.19	15%	50%	\$0.05	132	152	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	515.97	15	\$169.91	15%	38%	\$0.02	49	52	MI - TRM
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,084.15	10	\$376.86	15%	50%	\$0.02	160	170	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$907.66	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	854.73	15	\$399.37	8%	38%	\$0.03	104	116	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	492.30	3	\$42.60	8%	38%	\$0.01	63	65	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	1,400.13	15	\$638.99	8%	38%	\$0.03	172	189	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$242.04	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	8,766.48	10	\$760.74	8%	38%	\$0.01	1,132	1,143	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	Existing	2,956.96	15	\$221.95	8%	38%	\$0.01	385	386	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,511.70	3	\$63.17	8%	38%	\$0.00	190	197	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	4,511.11	10	\$568.07	8%	38%	\$0.01	563	588	6th Plan
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	605.35	8	\$782.28	10%	50%	\$0.10	410	425	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	429.50	8	\$277.38	5%	25%	\$0.05	145	151	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$380.49	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$826.33	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$3.15	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	10,657.81	17	\$705.55	5%	6%	\$0.01	185	185	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,689.52	10	\$331.36	15%	36%	\$0.02	612	620	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	10,522.17	17	\$4,496.41	25%	44%	\$0.03	3,389	3,476	RSMeans 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,107.58	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$535.40	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$253.66	8%	38%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$309.33	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$88.10	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$859.25	8%	38%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Retrocommissioning	per Facility	Existing	4,144.98	3	\$1,557.54	5%	39%	\$0.02	2,469	2,450	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	Existing	3,688.36	3	\$596.88	0%	5%	\$0.00	320	322	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$310.54	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	1,249.32	10	\$2,768.72	15%	24%	\$0.02	201	204	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$1,133.24	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	New	3,548.21	3	\$1,557.54	5%	39%	\$0.02	1,920	1,912	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	1,972.41	10	\$60.03	15%	75%	\$0.00	376	376	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	2,031.49	15	\$1,026.50	15%	50%	\$0.03	221	224	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	510.16	15	\$168.46	15%	38%	\$0.02	36	36	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	59.74	5	\$10.41	15%	50%	\$0.01	7	7	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	948.58	20	\$724.19	15%	50%	\$0.05	103	104	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	511.01	15	\$169.91	15%	38%	\$0.02	37	36	MI - TRM
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	1,086.16	10	\$376.86	15%	50%	\$0.02	119	120	VT - TRM
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$907.66	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	New	877.68	15	\$399.37	8%	38%	\$0.03	82	83	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	495.70	3	\$42.60	8%	38%	\$0.01	47	47	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	1,384.89	15	\$638.99	8%	38%	\$0.03	130	131	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$242.04	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	8,734.08	10	\$760.74	8%	38%	\$0.01	832	832	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	New	2,954.66	15	\$221.95	8%	38%	\$0.01	282	282	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	New	1,488.06	3	\$63.17	8%	38%	\$0.00	141	141	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	4,431.20	10	\$568.07	8%	38%	\$0.01	421	421	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	516.64	8	\$782.28	10%	50%	\$0.11	327	327	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	366.57	8	\$277.38	5%	25%	\$0.06	116	116	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$380.49	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$826.33	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$3.15	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	9,178.14	17	\$705.55	5%	6%	\$0.01	146	146	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,431.12	10	\$331.36	15%	36%	\$0.02	477	477	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	9,077.55	17	\$2,697.80	25%	44%	\$0.02	2,737	2,737	RSMean 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,107.58	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$535.40	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	1,997.57	10	\$253.66	8%	38%	\$0.01	190	190	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	New	2,025.71	15	\$309.33	8%	38%	\$0.01	193	193	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,050.58	3	\$88.10	8%	38%	\$0.01	100	100	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,202.77	12	\$859.25	8%	38%	\$0.02	304	304	6th Plan
Metal Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	New	3,190.77	3	\$489.17	0%	5%	\$0.00	253	253	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$310.54	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	New	287.20	32	\$8,188.28	15%	52%	\$0.31	169	169	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$1,133.24	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$118.36	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$57.85	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$272.78	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$325.55	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$5,560.91	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$208.64	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$10,058.78	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,116.78	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$10,223.12	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$101.42	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$21.06	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$124.41	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$4,263.57	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,304.48	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$39.45	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	59,593.68	10	\$5,511.78	15%	75%	\$0.01	15,540	15,541	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$17,312.77	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	Existing	285.61	5	\$77.21	15%	75%	\$0.02	73	74	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,826.88	10	\$1,545.92	15%	75%	\$0.04	730	737	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,124.20	5	\$1,677.35	15%	75%	\$0.11	1,334	1,466	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	695.70	15	\$332.57	15%	50%	\$0.04	102	106	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,334.36	18	\$798.25	15%	50%	\$0.04	194	206	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	468.41	3	\$44.29	15%	50%	\$0.01	69	71	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,372.18	15	\$665.13	15%	50%	\$0.04	201	210	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	Existing	424.42	3	\$1,557.54	5%	39%	\$0.02	1,476	314	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	Existing	1,794.78	3	\$596.88	0%	5%	\$0.00	195	195	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	Existing	572.00	10	\$2,768.72	15%	24%	\$0.02	106	117	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$118.36	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$57.85	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$272.78	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$325.55	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	New	571.70	3	\$1,557.54	5%	39%	\$0.02	990	426	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$5,560.91	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$208.64	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$10,058.78	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,116.78	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$10,223.12	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$101.42	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$21.06	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$124.41	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$4,263.57	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,304.48	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$39.45	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	New	59,618.25	10	\$5,511.78	15%	75%	\$0.01	11,363	11,363	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$17,312.77	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	New	285.91	5	\$77.21	15%	75%	\$0.02	54	54	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,818.60	10	\$1,545.92	15%	75%	\$0.04	537	537	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	New	1,268.38	5	\$1,677.35	15%	75%	\$0.09	959	959	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	696.83	15	\$332.57	15%	50%	\$0.04	76	77	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	New	1,339.96	18	\$798.25	15%	50%	\$0.04	145	149	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	New	468.60	3	\$44.29	15%	50%	\$0.01	52	52	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,375.60	15	\$665.13	15%	50%	\$0.04	149	153	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	New	2,116.40	3	\$489.17	0%	5%	\$0.00	134	134	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	New	171.43	32	\$8,188.28	15%	52%	\$0.31	80	80	6th Plan
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$34,384.95	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	390.85	3	\$596.88	0%	5%	\$0.00	7	10	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	134.88	10	\$2,768.72	15%	24%	\$0.02	5	5	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	143.16	15	\$30.98	15%	35%	\$0.01	10	12	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,337.38	20	\$5,209.93	100%	at stock turnover	\$0.09	216	217	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$23,503.72	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	New	145.32	3	\$489.17	0%	5%	\$0.00	2	2	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	13.70	32	\$8,188.28	15%	52%	\$0.31	2	2	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	53.25	15	\$14.76	15%	35%	\$0.02	3	3	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,558.36	20	\$3,280.26	100%	at stock turnover	\$0.10	89	89	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	31,156.80	23	\$51,106.86	2%	at stock turnover	\$0.09	379	367	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	17,119.91	23	\$6,957.17	6%	at stock turnover	\$0.03	459	462	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,299.26	10	\$107.64	15%	45%	\$0.00	92	104	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,399.76	15	\$70.43	15%	60%	\$0.00	27	30	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	414.10	15	\$23.67	15%	75%	\$0.00	11	12	BEST Simulation
Mining and Extraction	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	14,915.80	15	\$76,641.80	15%	50%	\$0.34	577	661	BEST Simulation
Mining and Extraction	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,343.80	12	\$1,740.03	15%	50%	\$0.01	530	629	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	Existing	3,752.84	15	\$2,687.63	20%	50%	\$0.01	125	143	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	30,071.91	23	\$46,033.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	Existing	12,546.06	18	\$1,138.72	15%	75%	\$0.01	126	153	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	783.49	18	\$142.22	15%	25%	\$0.01	9	11	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	Existing	5,317.29	10	\$544.13	18%	30%	\$0.00	112	42	DEER
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	9,254.49	45	\$11,252.94	15%	25%	\$0.02	104	117	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,269.71	20	\$197.84	15%	25%	\$0.01	26	29	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	721.67	45	\$1,478.48	45%	50%	\$0.01	4	5	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	Existing	24,411.54	23	\$52,436.78	5%	at stock turnover	\$0.17	123	124	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$162.67	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	Existing	1,132.43	10	\$1,128.39	15%	24%	\$0.01	12	13	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	24,988.22	23	\$10,526.50	3%	at stock turnover	\$0.03	343	342	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,083.97	10	\$160.73	15%	45%	\$0.00	44	53	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	9,407.55	4	\$102.38	15%	50%	\$0.00	64	81	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,669.74	15	\$101.31	15%	60%	\$0.00	15	19	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	362.24	15	\$25.13	15%	75%	\$0.00	4	5	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	23,801.37	23	\$38,814.67	2%	at stock turnover	\$0.09	411	395	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	11,258.40	23	\$25.24	6%	at stock turnover	\$0.00	455	460	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,610.84	10	\$130.63	15%	45%	\$0.00	63	66	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	836.93	15	\$49.09	15%	60%	\$0.00	12	13	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,162.78	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,016.70	15	\$76,641.80	15%	50%	\$0.68	215	224	BEST Simulation
Mining and Extraction	Cooling	Destratification Fans (HVLS)	per Facility	New	7,435.22	12	\$1,130.44	15%	50%	\$0.01	229	238	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	New	2,107.10	15	\$2,061.38	20%	50%	\$0.01	55	58	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	22,955.53	23	\$34,961.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	New	8,174.27	18	\$766.71	15%	75%	\$0.01	62	67	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	584.11	18	\$124.39	15%	25%	\$0.01	5	5	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	New	2,858.62	10	\$325.54	18%	30%	\$0.00	66	34	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	New	750.87	45	\$4,618.77	15%	25%	\$0.01	7	7	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	New	1,150.47	20	\$207.48	15%	25%	\$0.02	10	11	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	0.87	45	\$215.47	45%	50%	\$0.01	0	0	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	New	14,520.30	23	\$31,040.35	5%	at stock turnover	\$0.17	115	116	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$436.39	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	New	170.76	32	\$3,570.74	15%	52%	\$0.11	6	6	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	16,274.46	23	\$7,980.52	3%	at stock turnover	\$0.04	335	335	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,805.11	10	\$102.47	15%	45%	\$0.00	18	19	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,047.82	4	\$65.85	15%	50%	\$0.00	27	30	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	667.98	15	\$46.76	15%	60%	\$0.00	5	5	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$4,274.82	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	Existing	108.36	15	\$2,687.63	20%	50%	\$0.01	48	80	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	323.25	5	\$88.35	15%	25%	\$0.01	48	101	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	140.29	10	\$17.83	33%	60%	\$0.01	57	120	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,887.67	10	\$121.86	15%	30%	\$0.00	436	863	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	2,247	2,310	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	1,138	1,163	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	1,456	3,802	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	32.52	10	\$1,128.39	15%	24%	\$0.01	5	7	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	New	94.27	15	\$2,061.38	20%	50%	\$0.01	33	48	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	280.30	5	\$87.96	15%	25%	\$0.01	32	48	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	136.68	10	\$10.91	44%	60%	\$0.00	24	38	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,625.16	10	\$121.37	15%	30%	\$0.00	284	418	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	2,377	2,639	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	1,206	1,320	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	1,538	3,506	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.59	32	\$3,570.74	15%	52%	\$0.11	3	5	6th Plan
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	2,821.88	23	\$36,385.81	2%	at stock turnover	\$0.09	34	32	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$1,740.03	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Heating	Energy Management System	per Facility	Existing	9,456.83	15	\$2,687.63	20%	50%	\$0.01	355	360	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	796.73	23	\$28,003.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	Existing	1,652.80	18	\$1,138.72	15%	75%	\$0.01	19	19	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	967.60	18	\$142.22	15%	25%	\$0.01	12	12	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	Existing	38,167.35	45	\$11,252.94	15%	25%	\$0.02	482	484	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	Existing	453.86	20	\$197.84	15%	25%	\$0.01	6	6	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	14,345.71	45	\$1,478.48	45%	50%	\$0.01	91	91	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$162.67	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	Existing	2,864.35	10	\$1,128.39	15%	24%	\$0.01	34	34	6th Plan
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	4,349.80	23	\$32,086.58	2%	at stock turnover	\$0.09	74	71	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$1,130.44	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Heating	Energy Management System	per Facility	New	8,950.50	15	\$2,061.38	20%	50%	\$0.01	249	249	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	3,153.07	23	\$21,267.73	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	New	1,027.81	18	\$766.71	15%	75%	\$0.01	9	9	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-11.30	18	\$124.39	15%	25%	\$0.01	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	New	36,249.63	45	\$4,618.77	15%	25%	\$0.01	336	336	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	New	-719.24	20	\$207.48	15%	25%	\$0.02	-7	-7	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	New	2,072.63	45	\$215.47	45%	50%	\$0.01	10	10	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$436.39	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	New	727.33	32	\$3,570.74	15%	52%	\$0.11	25	25	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	Existing	660.49	15	\$2,687.63	20%	50%	\$0.01	315	485	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	17,186	17,728	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,244.78	5	\$345.41	5%	40%	\$0.01	396	802	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	2,899.85	5	\$460.65	15%	50%	\$0.01	504	1,044	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,128.55	12	\$533.41	3%	25%	\$0.01	1,452	2,654	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	619.70	16	\$52.60	1%	3%	\$0.01	20	39	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	3,833.57	10	\$2,337.54	7%	60%	\$0.03	2,306	4,450	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$11,981.37	15%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,384.21	8	\$46.07	7%	15%	\$0.00	190	346	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$3.70	10%	25%	\$0.00	13	42	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	8,812	9,461	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	1,492	4,277	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	198.25	10	\$1,128.39	15%	24%	\$0.01	30	45	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	New	594.16	15	\$2,061.38	20%	50%	\$0.01	213	307	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	18,177	20,251	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,745.64	5	\$345.12	5%	40%	\$0.01	247	349	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,429.47	5	\$460.16	15%	50%	\$0.01	346	487	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,701.99	12	\$501.56	4%	25%	\$0.01	909	1,310	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	555.60	16	\$52.41	1%	3%	\$0.00	13	19	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,445.43	10	\$2,403.00	22%	60%	\$0.03	923	1,331	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$11,981.37	18%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,240.83	8	\$44.91	7%	15%	\$0.00	123	177	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.82	5	\$3.60	10%	25%	\$0.00	8	14	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	9,337	10,221	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	1,576	3,943	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.92	32	\$3,570.74	15%	52%	\$0.11	19	28	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	Existing	728.49	3	\$3,437.68	10%	40%	\$0.02	347	347	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	218.68	10	\$1,128.39	15%	24%	\$0.01	33	33	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	New	728.95	3	\$3,437.68	10%	40%	\$0.01	235	235	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	New	59.22	32	\$3,570.74	15%	52%	\$0.11	24	24	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	30,916.24	10	\$948.67	15%	75%	\$0.00	15,097	15,167	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	32,328.82	15	\$16,218.39	15%	50%	\$0.03	8,818	9,638	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	7,681.47	15	\$2,662.88	15%	38%	\$0.02	1,342	1,466	MI - TRM
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	899.04	5	\$163.65	15%	50%	\$0.01	245	268	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	15,064.73	20	\$11,441.82	15%	50%	\$0.05	4,002	4,547	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	7,692.06	15	\$2,682.95	15%	38%	\$0.02	1,363	1,471	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	16,979.67	10	\$851.75	15%	50%	\$0.00	4,692	5,005	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$730.57	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	Existing	14,542.76	15	\$902.60	8%	38%	\$0.00	3,486	3,633	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	Existing	8,310.02	3	\$96.24	8%	38%	\$0.00	2,034	2,034	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	22,927.29	15	\$1,444.10	8%	38%	\$0.00	5,470	5,752	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$194.82	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	30,830.39	10	\$4,006.65	8%	38%	\$0.01	7,472	7,545	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	Existing	10,387.53	15	\$1,168.62	8%	38%	\$0.01	2,542	2,542	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	Existing	5,316.40	3	\$332.36	8%	38%	\$0.00	1,252	1,301	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	15,856.14	10	\$2,991.64	8%	38%	\$0.01	3,714	3,881	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,898.97	8	\$3,456.38	10%	50%	\$0.13	2,959	3,155	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,347.34	8	\$1,225.41	5%	25%	\$0.07	1,050	1,119	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$16,538.77	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$63.12	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	33,823.45	17	\$7,794.03	5%	6%	\$0.02	1,366	1,380	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	5,360.65	10	\$1,244.41	15%	36%	\$0.02	4,507	4,648	6th Plan
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	Existing	32,602.52	17	\$37,760.79	25%	44%	\$0.09	24,375	25,267	RSMMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$22,163.19	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$10,713.97	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	36,975.89	10	\$7,011.54	8%	38%	\$0.01	8,957	9,049	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	Existing	37,350.79	15	\$8,548.56	8%	38%	\$0.02	9,131	9,141	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	Existing	19,469.35	3	\$2,431.54	8%	38%	\$0.01	4,669	4,765	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	60,518.20	12	\$23,745.90	8%	38%	\$0.03	14,441	14,811	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	Existing	13,127.77	3	\$3,437.68	10%	40%	\$0.02	15,645	16,064	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$1,744.41	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	Existing	4,075.81	10	\$1,128.39	15%	24%	\$0.01	1,549	1,559	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$611.54	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	New	16,535.87	3	\$3,437.68	10%	40%	\$0.01	9,095	8,852	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$948.67	15%	75%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$16,218.39	15%	50%	\$10.00	0	0	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$2,662.88	15%	38%	\$10.00	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$163.65	15%	50%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$11,441.82	15%	50%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$2,682.95	15%	38%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$851.75	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$730.57	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$902.60	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$96.24	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$1,444.10	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$194.82	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$4,006.65	8%	38%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	New	0.00	15	\$1,168.62	8%	38%	\$10.00	0	0	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$332.36	8%	38%	\$10.00	0	0	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$2,991.64	8%	38%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	2,408.48	8	\$3,456.38	10%	50%	\$0.11	1,718	1,718	Developed from RTF
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,710.49	8	\$1,225.41	5%	25%	\$0.05	610	610	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$16,538.77	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$63.12	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	43,281.36	17	\$7,794.03	5%	6%	\$0.01	774	774	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	6,873.53	10	\$1,244.41	15%	36%	\$0.01	2,581	2,581	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	New	41,953.96	17	\$22,656.48	25%	44%	\$0.04	14,096	14,235	RMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$22,163.19	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$10,713.97	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	36,751.60	10	\$7,011.54	8%	38%	\$0.01	6,568	6,568	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	New	37,366.23	15	\$8,548.56	8%	38%	\$0.02	6,684	6,684	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	New	19,328.77	3	\$2,431.54	8%	38%	\$0.01	3,452	3,452	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	New	59,955.57	12	\$23,745.90	8%	38%	\$0.03	10,598	10,702	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$1,744.41	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	New	1,342.55	32	\$3,570.74	15%	52%	\$0.11	890	890	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$611.54	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$37.79	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$178.06	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$212.45	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$136.08	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$6,565.21	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$728.92	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$6,672.36	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	MT - IRP 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,541.21	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$26.40	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$605.69	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$11,578.68	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	Existing	801.84	5	\$30.98	15%	75%	\$0.00	392	392	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	7,996.97	10	\$619.33	15%	75%	\$0.01	3,905	3,914	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	Existing	1,069.22	5	\$160.43	15%	75%	\$0.01	1,538	1,570	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$68.38	15%	50%	\$10.00	0	0	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$141.83	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$7.89	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$118.26	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	Existing	589.27	3	\$3,437.68	10%	40%	\$0.02	1,262	433	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	Existing	534.94	10	\$1,128.39	15%	24%	\$0.01	120	123	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$37.79	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$178.06	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$212.45	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	New	321.03	3	\$3,437.68	10%	40%	\$0.01	1,432	567	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$136.08	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$6,565.21	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$728.92	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$6,672.36	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,541.21	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$26.40	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$605.69	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$11,578.68	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	New	801.84	5	\$30.98	15%	75%	\$0.00	287	287	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	7,988.73	10	\$619.33	15%	75%	\$0.01	2,857	2,857	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	New	805.21	5	\$160.43	15%	75%	\$0.02	1,438	1,438	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	844.70	15	\$68.38	15%	50%	\$0.01	176	176	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	New	1,667.53	18	\$141.83	15%	50%	\$0.01	347	347	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	New	583.16	3	\$7.89	15%	50%	\$0.00	122	122	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,734.35	15	\$118.26	15%	50%	\$0.01	362	362	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	New	107.61	32	\$3,570.74	15%	52%	\$0.11	119	119	6th Plan
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$1,740.03	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	Existing	94.45	10	\$1,128.39	15%	24%	\$0.01	6	7	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	100.25	15	\$2.73	15%	35%	\$0.00	14	16	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	3,031.94	20	\$3,641.88	100%	at stock turnover	\$0.09	284	285	BEST Simulation
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$1,130.44	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	New	9.59	32	\$3,570.74	15%	52%	\$0.11	2	2	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	37.27	15	\$1.17	15%	35%	\$0.00	4	4	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,788.36	20	\$2,292.99	100%	at stock turnover	\$0.10	116	117	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	61,236.08	23	\$100,446.26	2%	at stock turnover	\$0.09	1,124	1,088	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	33,647.75	23	\$13,673.74	6%	at stock turnover	\$0.03	1,362	1,369	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	14,321.06	10	\$3,980.93	15%	45%	\$0.02	272	309	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,785.79	15	\$1,776.22	15%	60%	\$0.05	79	91	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	810.28	15	\$704.35	15%	75%	\$0.06	31	35	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	29,264.92	15	\$138,684.81	15%	50%	\$0.31	1,708	1,957	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	25,860.18	12	\$47,240.61	15%	50%	\$0.13	1,529	1,849	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	Existing	7,655.06	15	\$43,380.07	20%	50%	\$0.12	390	439	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	59,103.83	23	\$90,475.62	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	24,595.68	18	\$28,597.66	15%	75%	\$0.07	371	452	AEG research & analysis
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,562.71	18	\$2,274.34	15%	25%	\$0.05	26	31	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	Existing	10,367.77	10	\$18,769.51	18%	30%	\$0.04	332	125	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	18,878.19	45	\$172,218.58	15%	25%	\$0.14	323	361	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	4,510.17	20	\$4,355.32	15%	25%	\$0.06	76	86	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,455.54	45	\$21,723.35	45%	50%	\$0.06	12	14	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	47,978.84	23	\$103,060.11	5%	at stock turnover	\$0.17	365	367	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	Existing	6,976.08	3	\$658.17	0%	5%	\$0.00	61	72	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$294.36	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	2,376.59	10	\$3,021.35	15%	24%	\$0.02	38	43	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	49,112.26	23	\$20,688.97	3%	at stock turnover	\$0.03	1,017	1,012	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	13,898.74	10	\$4,002.08	15%	45%	\$0.02	125	157	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	18,457.57	4	\$2,408.12	15%	50%	\$0.01	196	241	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,324.50	15	\$2,197.84	15%	60%	\$0.04	45	57	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	708.86	15	\$640.19	15%	75%	\$0.06	13	16	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	46,779.61	23	\$76,287.00	2%	at stock turnover	\$0.09	1,219	1,171	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	22,127.45	23	\$6.13	6%	at stock turnover	\$0.00	1,349	1,364	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	12,975.75	10	\$4,022.00	15%	45%	\$0.02	187	196	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,666.72	15	\$1,192.96	15%	60%	\$0.05	36	38	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$3,913.60	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	13,772.48	15	\$138,684.81	15%	50%	\$0.62	638	663	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	14,422.99	12	\$32,291.10	15%	50%	\$0.14	670	696	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	New	4,281.40	15	\$34,525.96	20%	50%	\$0.11	170	177	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	45,117.18	23	\$68,714.49	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	16,030.79	18	\$21,479.22	15%	75%	\$0.08	182	199	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,228.90	18	\$1,127.03	15%	25%	\$0.06	16	17	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	New	5,587.73	10	\$11,668.35	18%	30%	\$0.05	197	99	DEER
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,470.05	45	\$118,501.83	15%	25%	\$0.13	20	20	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	2,367.77	20	\$1,665.17	15%	25%	\$0.09	31	33	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.74	45	\$2,631.45	45%	50%	\$0.05	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	New	28,538.44	23	\$61,007.21	5%	at stock turnover	\$0.17	341	345	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	New	3,887.49	3	\$509.93	0%	5%	\$0.00	26	27	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$789.66	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	New	335.18	32	\$8,535.95	15%	52%	\$0.29	16	17	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	31,986.10	23	\$15,685.05	3%	at stock turnover	\$0.04	994	992	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,468.72	10	\$2,603.25	15%	45%	\$0.02	52	56	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	9,907.91	4	\$1,566.99	15%	50%	\$0.01	81	88	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,330.18	15	\$1,062.70	15%	60%	\$0.05	14	15	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$7,735.36	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$43,380.07	20%	50%	\$0.12	72	119	BEST Simulation
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.10	15%	25%	\$0.01	82	162	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.76	33%	60%	\$0.06	85	179	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.70	15%	30%	\$0.03	647	1,290	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	3,390	3,485	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	1,716	1,755	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	2,196	5,735	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$658.17	0%	5%	\$0.00	12	26	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$3,021.35	15%	24%	\$0.02	8	12	6th Plan
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$34,525.96	20%	50%	\$0.11	49	72	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.75	15%	25%	\$0.01	54	79	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.83	44%	60%	\$0.03	35	52	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.77	15%	30%	\$0.03	424	628	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	3,585	3,981	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	1,819	1,991	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	2,320	5,288	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$509.93	0%	5%	\$0.00	8	11	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$8,535.95	15%	52%	\$0.29	5	7	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	5,546.18	23	\$71,513.26	2%	at stock turnover	\$0.09	100	96	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$47,240.61	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	Existing	18,554.11	15	\$43,380.07	20%	50%	\$0.12	1,051	1,065	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,565.90	23	\$55,037.55	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	3,235.35	18	\$28,597.66	15%	75%	\$0.07	55	56	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,894.24	18	\$2,274.34	15%	25%	\$0.05	36	36	BEST Simulation
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	74,883.54	45	\$172,218.58	15%	25%	\$0.14	1,425	1,432	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	888.13	20	\$4,355.32	15%	25%	\$0.06	17	17	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	28,155.02	45	\$21,723.35	45%	50%	\$0.06	268	269	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	Existing	16,306.07	3	\$658.17	0%	5%	\$0.00	156	156	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$294.36	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	5,634.54	10	\$3,021.35	15%	24%	\$0.02	101	101	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	8,549.17	23	\$63,063.49	2%	at stock turnover	\$0.09	220	210	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$32,291.10	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	New	17,572.40	15	\$34,525.96	20%	50%	\$0.11	736	736	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,197.09	23	\$41,799.96	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,016.67	18	\$21,479.22	15%	75%	\$0.08	25	25	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-22.67	18	\$1,127.03	15%	25%	\$0.06	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	71,168.40	45	\$118,501.83	15%	25%	\$0.13	994	995	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,442.73	20	\$1,665.17	15%	25%	\$0.09	-20	-20	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,069.42	45	\$2,631.45	45%	50%	\$0.05	28	28	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	New	15,446.86	3	\$509.93	0%	5%	\$0.00	108	108	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$789.66	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,427.60	32	\$8,535.95	15%	52%	\$0.29	74	74	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$43,380.07	20%	50%	\$0.12	395	642	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	25,922	26,740	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,346.57	5	\$447.89	5%	40%	\$0.01	640	1,248	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,030.36	5	\$597.36	15%	50%	\$0.01	815	1,625	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,016.01	3%	25%	\$0.06	1,816	3,633	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$74.03	1%	3%	\$0.01	30	59	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.62	7%	60%	\$0.03	3,722	6,925	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$21,680.52	15%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.06	7%	15%	\$0.01	285	520	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.68	10%	25%	\$0.00	19	63	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	13,292	14,269	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	2,251	6,451	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$658.17	0%	5%	\$0.00	73	144	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$3,021.35	15%	24%	\$0.02	45	69	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$34,525.96	20%	50%	\$0.11	289	417	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	27,417	30,545	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,826.52	5	\$447.54	5%	40%	\$0.01	411	552	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,542.44	5	\$596.65	15%	50%	\$0.01	529	772	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.23	4%	25%	\$0.05	1,234	1,780	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	557.87	16	\$73.68	1%	3%	\$0.01	20	29	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,403.01	22%	60%	\$0.03	1,463	2,109	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$21,680.52	18%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.90	7%	15%	\$0.01	185	266	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.51	5	\$18.68	10%	25%	\$0.00	12	21	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	14,083	15,416	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	2,377	5,948	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	537.91	3	\$509.93	0%	5%	\$0.00	49	70	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$8,535.95	15%	52%	\$0.29	29	42	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$88.13	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,298.33	3	\$640.72	5%	39%	\$0.01	1,058	1,058	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,127.90	3	\$658.17	0%	5%	\$0.00	135	135	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	389.74	10	\$3,021.35	15%	24%	\$0.02	86	88	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$88.13	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	New	1,299.68	3	\$640.72	5%	39%	\$0.01	717	717	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,127.90	3	\$509.93	0%	5%	\$0.00	92	92	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	105.46	32	\$8,535.95	15%	52%	\$0.29	64	64	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,716.02	10	\$113.16	15%	75%	\$0.00	2,743	2,743	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	3,848.39	15	\$1,933.97	15%	50%	\$0.03	1,560	1,731	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	964.75	15	\$317.45	15%	38%	\$0.02	257	273	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	113.61	5	\$19.57	15%	50%	\$0.01	47	50	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,775.00	20	\$1,364.46	15%	50%	\$0.05	703	812	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	978.13	15	\$319.92	15%	38%	\$0.02	261	277	MI - TRM
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	2,064.04	10	\$710.17	15%	50%	\$0.02	853	912	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,321.98	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	1,627.10	15	\$752.47	8%	38%	\$0.03	586	625	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	930.05	3	\$80.20	8%	38%	\$0.01	337	350	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,665.49	15	\$1,204.06	8%	38%	\$0.03	920	1,016	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$352.53	15%	50%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	6,808.59	10	\$590.84	8%	38%	\$0.01	2,489	2,513	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	Existing	2,292.54	15	\$172.39	8%	38%	\$0.01	846	846	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,174.08	3	\$49.00	8%	38%	\$0.00	417	433	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	3,503.61	10	\$441.19	8%	38%	\$0.01	1,238	1,293	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	182.17	8	\$284.49	10%	50%	\$0.11	427	457	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	129.25	8	\$100.82	5%	25%	\$0.06	151	162	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$554.35	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$36.84	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$0.18	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	3,318.29	17	\$256.64	5%	6%	\$0.01	203	204	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	519.08	10	\$120.56	15%	36%	\$0.02	647	679	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	3,161.11	17	\$1,635.73	25%	44%	\$0.04	3,528	3,695	RSMans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$49.35	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$23.80	0%	0%	\$10.00	0	0	6th Plan

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Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	1,889.79	10	\$239.19	8%	38%	\$0.01	691	698	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	Existing	1,908.96	15	\$291.54	8%	38%	\$0.01	704	705	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	997.80	3	\$83.02	8%	38%	\$0.01	361	368	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	3,093.01	12	\$809.93	8%	38%	\$0.02	1,098	1,142	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	Existing	1,247.27	3	\$640.72	5%	39%	\$0.01	2,657	2,609	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,149.70	3	\$658.17	0%	5%	\$0.00	352	357	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$13.92	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	386.08	10	\$3,021.35	15%	24%	\$0.02	214	223	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$220.33	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	New	1,234.67	3	\$640.72	5%	39%	\$0.01	1,967	1,879	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	3,716.02	10	\$113.16	15%	75%	\$0.00	2,005	2,005	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	3,827.33	15	\$1,933.97	15%	50%	\$0.03	1,181	1,194	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	955.50	15	\$317.45	15%	38%	\$0.02	190	192	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	112.56	5	\$19.57	15%	50%	\$0.01	35	35	MI - TRM
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	1,787.12	20	\$1,364.46	15%	50%	\$0.05	550	556	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	968.40	15	\$319.92	15%	38%	\$0.02	193	195	MI - TRM
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	2,046.33	10	\$710.17	15%	50%	\$0.02	634	641	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,321.98	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	New	1,653.54	15	\$752.47	8%	38%	\$0.03	438	443	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	933.90	3	\$80.20	8%	38%	\$0.01	251	251	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	2,609.14	15	\$1,204.06	8%	38%	\$0.03	691	699	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$352.53	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	6,783.43	10	\$590.84	8%	38%	\$0.01	1,829	1,829	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	New	2,293.00	15	\$172.39	8%	38%	\$0.01	619	619	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	New	1,155.72	3	\$49.00	8%	38%	\$0.00	311	311	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	3,441.55	10	\$441.19	8%	38%	\$0.01	925	925	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	179.78	8	\$284.49	10%	50%	\$0.11	322	322	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	127.56	8	\$100.82	5%	25%	\$0.06	114	114	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$554.35	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$36.84	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$0.18	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	3,316.15	17	\$256.64	5%	6%	\$0.01	149	149	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	508.28	10	\$120.56	15%	36%	\$0.02	473	479	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	3,223.92	17	\$981.44	25%	44%	\$0.02	2,718	2,749	RSMears 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$49.35	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$23.80	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	1,882.81	10	\$239.19	8%	38%	\$0.01	508	508	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	New	1,909.33	15	\$291.54	8%	38%	\$0.01	515	515	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	New	990.23	3	\$83.02	8%	38%	\$0.01	267	267	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,018.77	12	\$809.93	8%	38%	\$0.02	803	812	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	New	1,151.14	3	\$509.93	0%	5%	\$0.00	259	259	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$13.92	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	New	99.94	32	\$8,535.95	15%	52%	\$0.29	166	166	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$220.33	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$111.40	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$11.28	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$53.23	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$63.46	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$8,099.35	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$40.72	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,963.41	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$218.04	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,995.49	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$32.96	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$30.85	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$181.20	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$6,209.79	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$833.20	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$14.28	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,792.26	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$6,260.03	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	Existing	47.20	5	\$12.69	15%	75%	\$0.02	34	35	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	467.20	10	\$255.58	15%	75%	\$0.04	341	345	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	Existing	437.92	5	\$606.53	15%	75%	\$0.11	1,593	1,616	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	671.69	15	\$321.15	15%	50%	\$0.04	270	290	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,288.32	18	\$770.63	15%	50%	\$0.04	530	563	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	452.25	3	\$42.83	15%	50%	\$0.01	189	195	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,324.84	15	\$642.13	15%	50%	\$0.04	560	575	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	Existing	191.15	3	\$640.72	5%	39%	\$0.01	2,036	400	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	Existing	648.97	3	\$658.17	0%	5%	\$0.00	200	200	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	Existing	223.94	10	\$3,021.35	15%	24%	\$0.02	127	129	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$111.40	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$11.28	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$53.23	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$63.46	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Commissioning	per Facility	New	191.54	3	\$640.72	5%	39%	\$0.01	1,489	579	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$8,099.35	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$40.72	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,963.41	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$218.04	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,995.49	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$32.96	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$30.85	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$181.20	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$6,209.79	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$833.20	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$14.28	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,792.26	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$6,260.03	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	New	47.25	5	\$12.69	15%	75%	\$0.02	25	25	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	465.83	10	\$255.58	15%	75%	\$0.04	251	251	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	New	436.67	5	\$606.53	15%	75%	\$0.11	1,176	1,176	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	672.78	15	\$321.15	15%	50%	\$0.04	207	212	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	New	1,293.73	18	\$770.63	15%	50%	\$0.04	397	406	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	New	452.43	3	\$42.83	15%	50%	\$0.01	139	142	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,328.13	15	\$642.13	15%	50%	\$0.04	408	418	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	New	648.97	3	\$509.93	0%	5%	\$0.00	146	146	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	New	59.02	32	\$8,535.95	15%	52%	\$0.29	98	98	6th Plan
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$47,240.61	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	536.98	3	\$658.17	0%	5%	\$0.00	28	38	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	185.31	10	\$3,021.35	15%	24%	\$0.02	18	21	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	196.69	15	\$42.48	15%	35%	\$0.01	41	48	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,959.02	20	\$7,157.80	100%	at stock turnover	\$0.09	842	844	BEST Simulation
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$32,291.10	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	New	199.65	3	\$509.93	0%	5%	\$0.00	9	9	BEST Simulation
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	18.83	32	\$8,535.95	15%	52%	\$0.29	6	6	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	73.16	15	\$20.27	15%	35%	\$0.02	13	13	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,514.88	20	\$4,506.67	100%	at stock turnover	\$0.10	345	347	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	43,492.22	23	\$71,340.80	2%	at stock turnover	\$0.09	82	79	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	23,897.93	23	\$9,711.62	6%	at stock turnover	\$0.03	99	99	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,189.14	10	\$2,827.44	15%	45%	\$0.02	20	22	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,965.45	15	\$1,261.54	15%	60%	\$0.05	6	7	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	571.68	15	\$500.25	15%	75%	\$0.06	2	3	BEST Simulation
Paper Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	20,647.84	15	\$109,544.41	15%	50%	\$0.35	123	141	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	18,245.40	12	\$33,552.08	15%	50%	\$0.13	110	133	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	Existing	5,400.94	15	\$31,202.47	20%	50%	\$0.12	28	32	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	41,977.81	23	\$64,259.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	17,353.08	18	\$20,311.10	15%	75%	\$0.07	27	33	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,102.54	18	\$1,615.32	15%	25%	\$0.05	2	2	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	Existing	7,314.79	10	\$13,330.78	18%	30%	\$0.04	24	9	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	13,319.27	45	\$122,316.19	15%	25%	\$0.14	23	26	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,182.07	20	\$3,093.36	15%	25%	\$0.06	6	6	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,026.93	45	\$15,428.80	45%	50%	\$0.06	1	1	BEST Simulation
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	34,076.42	23	\$73,197.25	5%	at stock turnover	\$0.17	27	27	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	Existing	4,884.79	3	\$3,889.88	0%	24%	\$0.01	20	25	BEST Simulation

Measure Data and Assumptions

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Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$23.25	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,676.76	10	\$3,801.75	15%	24%	\$0.03	3	3	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	34,881.42	23	\$14,694.10	3%	at stock turnover	\$0.03	74	74	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,888.61	10	\$2,842.47	15%	45%	\$0.02	9	11	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,132.14	4	\$1,710.41	15%	50%	\$0.01	14	18	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,345.58	15	\$1,561.02	15%	60%	\$0.04	3	4	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	500.14	15	\$454.72	15%	75%	\$0.06	1	1	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	33,224.68	23	\$54,181.96	2%	at stock turnover	\$0.09	89	85	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	15,715.76	23	\$741.97	6%	at stock turnover	\$0.00	98	99	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	9,228.17	10	\$2,856.54	15%	45%	\$0.02	14	14	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,177.78	15	\$847.20	15%	60%	\$0.05	3	3	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$309.09	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	9,732.48	15	\$109,544.41	15%	50%	\$0.69	46	48	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	10,192.05	12	\$22,934.43	15%	50%	\$0.14	48	50	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	New	3,025.46	15	\$24,912.30	20%	50%	\$0.11	12	13	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	32,043.96	23	\$48,803.67	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	11,328.24	18	\$15,255.33	15%	75%	\$0.08	13	14	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	868.39	18	\$800.42	15%	25%	\$0.06	1	1	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	New	3,948.53	10	\$8,287.39	18%	30%	\$0.05	14	7	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,038.81	45	\$84,164.58	15%	25%	\$0.13	1	1	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,673.19	20	\$1,182.60	15%	25%	\$0.09	2	2	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.23	45	\$1,868.99	45%	50%	\$0.05	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	New	20,269.10	23	\$43,329.67	5%	at stock turnover	\$0.17	25	25	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	New	2,714.52	3	\$3,385.04	0%	24%	\$0.01	9	9	BEST Simulation
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$62.37	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	New	236.86	32	\$11,804.70	15%	52%	\$0.33	1	1	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	22,717.76	23	\$11,140.13	3%	at stock turnover	\$0.04	72	72	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,311.60	10	\$1,848.94	15%	45%	\$0.02	4	4	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,046.33	4	\$1,112.99	15%	50%	\$0.01	6	6	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	939.99	15	\$754.75	15%	60%	\$0.05	1	1	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$610.93	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	106.53	15	\$31,202.47	20%	50%	\$0.12	7	12	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.94	5	\$65.99	15%	25%	\$0.01	8	17	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	137.85	10	\$154.68	33%	60%	\$0.06	9	18	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,854.44	10	\$1,056.74	15%	30%	\$0.03	66	131	AEG research & analysis
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	347	356	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	176	179	AEO 2013
Paper Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	225	587	EIA 2011/Developed from RTF
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	101.33	3	\$3,889.88	0%	24%	\$0.01	6	13	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	34.79	10	\$3,801.75	15%	24%	\$0.03	1	1	6th Plan
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	New	92.86	15	\$24,912.30	20%	50%	\$0.11	5	7	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.70	5	\$65.72	15%	25%	\$0.01	5	8	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	124.95	10	\$94.81	44%	60%	\$0.03	4	5	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,610.97	10	\$1,051.73	15%	30%	\$0.03	43	64	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	367	407	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	186	204	AEO 2013
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	87.81	3	\$3,385.04	0%	24%	\$0.01	4	6	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.55	32	\$11,804.70	15%	52%	\$0.33	0	1	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	3,939.11	23	\$50,791.47	2%	at stock turnover	\$0.09	7	7	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$33,552.08	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	Existing	13,090.14	15	\$31,202.47	20%	50%	\$0.12	76	77	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,112.16	23	\$39,089.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	2,282.58	18	\$20,311.10	15%	75%	\$0.07	4	4	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,336.41	18	\$1,615.32	15%	25%	\$0.05	3	3	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	52,831.06	45	\$122,316.19	15%	25%	\$0.14	103	103	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	626.58	20	\$3,093.36	15%	25%	\$0.06	1	1	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	19,863.62	45	\$15,428.80	45%	50%	\$0.06	19	19	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	Existing	11,581.20	3	\$3,889.88	0%	24%	\$0.01	54	55	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$23.25	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	3,975.22	10	\$3,801.75	15%	24%	\$0.03	7	7	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,071.95	23	\$44,790.11	2%	at stock turnover	\$0.09	16	15	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$22,934.43	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	New	12,417.11	15	\$24,912.30	20%	50%	\$0.11	53	53	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,401.42	23	\$29,687.94	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	New	1,425.03	18	\$15,255.33	15%	75%	\$0.08	2	2	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-16.02	18	\$800.42	15%	25%	\$0.06	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	50,289.23	45	\$84,164.58	15%	25%	\$0.13	72	72	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,019.46	20	\$1,182.60	15%	25%	\$0.09	-1	-1	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	2,875.55	45	\$1,868.99	45%	50%	\$0.05	2	2	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	New	10,970.95	3	\$3,385.04	0%	24%	\$0.01	38	38	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$62.37	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,008.78	32	\$11,804.70	15%	52%	\$0.33	5	5	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	Existing	576.14	15	\$31,202.47	20%	50%	\$0.12	40	65	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	2,651	2,735	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,350.60	5	\$448.03	5%	40%	\$0.01	62	128	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,035.56	5	\$597.29	15%	50%	\$0.01	87	166	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,595.25	12	\$4,016.02	3%	25%	\$0.06	184	369	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	622.90	16	\$73.93	1%	3%	\$0.01	3	6	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	3,980.77	10	\$2,337.49	7%	60%	\$0.03	378	704	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$17,125.02	15%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,383.29	8	\$347.09	7%	15%	\$0.01	29	53	CA - DEER
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.80	10%	25%	\$0.00	2	6	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	1,360	1,460	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	230	660	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	580.10	3	\$3,889.88	0%	24%	\$0.01	34	70	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	199.15	10	\$3,801.75	15%	24%	\$0.03	5	7	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	New	537.05	15	\$24,912.30	20%	50%	\$0.11	29	42	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	2,804	3,124	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,909.32	5	\$447.48	5%	40%	\$0.01	40	59	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,465.34	5	\$596.73	15%	50%	\$0.01	56	76	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,345.05	12	\$3,775.30	4%	25%	\$0.05	126	181	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	558.60	16	\$73.65	1%	3%	\$0.01	2	3	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,587.45	10	\$2,402.93	22%	60%	\$0.03	149	215	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$17,125.02	18%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,240.16	8	\$337.91	7%	15%	\$0.01	19	27	CA - DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.73	5	\$18.66	10%	25%	\$0.00	1	2	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	1,440	1,577	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	243	608	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	243	608	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	521.44	3	\$3,385.04	0%	24%	\$0.01	23	33	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.64	32	\$11,804.70	15%	52%	\$0.33	3	4	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$6.96	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,010.46	3	\$2,705.33	10%	35%	\$0.01	124	123	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,758.26	3	\$3,889.88	0%	24%	\$0.01	102	103	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	603.52	10	\$3,801.75	15%	24%	\$0.03	14	14	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$6.96	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	New	2,015.73	3	\$2,705.33	10%	35%	\$0.01	84	84	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,758.26	3	\$3,385.04	0%	24%	\$0.01	69	70	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	164.01	32	\$11,804.70	15%	52%	\$0.33	10	10	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	13,996.82	10	\$426.04	15%	75%	\$0.00	1,057	1,057	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	14,399.53	15	\$7,284.54	15%	50%	\$0.03	599	663	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	3,640.20	15	\$1,195.97	15%	38%	\$0.02	101	106	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	428.66	5	\$73.51	15%	50%	\$0.01	18	19	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	6,606.13	20	\$5,139.18	15%	50%	\$0.05	270	310	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	3,690.66	15	\$1,205.02	15%	38%	\$0.02	101	107	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	7,727.64	10	\$2,674.84	15%	50%	\$0.02	328	349	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$104.42	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	6,091.83	15	\$2,834.40	8%	38%	\$0.03	225	239	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	3,509.26	3	\$302.26	8%	38%	\$0.01	130	135	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	9,979.48	15	\$4,534.93	8%	38%	\$0.03	354	389	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$27.85	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	41,545.74	10	\$3,599.18	8%	38%	\$0.01	1,553	1,569	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	Existing	13,996.82	15	\$1,049.78	8%	38%	\$0.01	528	528	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	Existing	7,164.15	3	\$298.64	8%	38%	\$0.00	260	270	Scaled from Optimization
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	21,378.81	10	\$2,687.37	8%	38%	\$0.01	773	807	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,684.42	8	\$2,600.36	10%	50%	\$0.11	405	431	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,195.12	8	\$921.97	5%	25%	\$0.06	144	153	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$43.72	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	73,275.79	10	\$6,143.84	15%	29%	\$0.01	1,313	1,314	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	625.59	1	\$23.39	15%	52%	\$0.00	28	29	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	30,474.56	17	\$2,345.43	5%	6%	\$0.01	192	192	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	4,774.36	10	\$1,101.99	15%	36%	\$0.02	617	638	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	29,117.05	17	\$14,948.05	25%	44%	\$0.04	3,342	3,481	RSMMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$8,233.23	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	21,283.91	10	\$3,980.10	15%	29%	\$0.01	370	382	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	25,718.79	10	\$3,249.30	8%	38%	\$0.01	962	971	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	Existing	25,979.60	15	\$3,961.45	8%	38%	\$0.01	980	981	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	13,579.41	3	\$1,126.77	8%	38%	\$0.01	503	513	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	42,093.64	12	\$11,004.15	8%	38%	\$0.02	1,550	1,589	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	Existing	11,524.83	3	\$2,705.33	10%	35%	\$0.01	1,812	1,813	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	Existing	10,256.51	3	\$3,889.88	0%	24%	\$0.01	1,492	1,593	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,309.51	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	3,505.95	10	\$3,801.75	15%	24%	\$0.03	199	207	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$1,905.89	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	New	11,396.32	3	\$2,705.33	10%	35%	\$0.01	1,323	1,305	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	13,996.82	10	\$426.04	15%	75%	\$0.00	773	773	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	14,343.32	15	\$7,284.54	15%	50%	\$0.03	454	458	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	3,625.11	15	\$1,195.97	15%	38%	\$0.02	75	75	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	424.52	5	\$73.51	15%	50%	\$0.01	14	14	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	6,646.38	20	\$5,139.18	15%	50%	\$0.05	211	211	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	3,631.15	15	\$1,205.02	15%	38%	\$0.02	75	75	MI - TRM
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	7,668.71	10	\$2,674.84	15%	50%	\$0.02	244	246	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$104.42	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	New	6,196.74	15	\$2,834.40	8%	38%	\$0.03	168	170	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	3,522.34	3	\$302.26	8%	38%	\$0.01	97	97	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	9,777.95	15	\$4,534.93	8%	38%	\$0.03	266	268	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$27.85	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	41,375.13	10	\$3,599.18	8%	38%	\$0.01	1,141	1,141	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	New	13,986.02	15	\$1,049.78	8%	38%	\$0.01	386	386	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	New	7,049.22	3	\$298.64	8%	38%	\$0.00	194	194	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	20,991.44	10	\$2,687.37	8%	38%	\$0.01	577	577	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,661.97	8	\$2,600.36	10%	50%	\$0.11	304	304	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,179.22	8	\$921.97	5%	25%	\$0.06	108	108	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$43.72	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	73,260.10	10	\$6,143.84	15%	29%	\$0.01	960	960	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	606.35	1	\$23.39	15%	52%	\$0.00	20	20	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	30,530.06	17	\$2,345.43	5%	6%	\$0.01	140	140	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	4,666.07	10	\$1,101.99	15%	36%	\$0.02	449	449	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	29,596.19	17	\$8,968.77	25%	44%	\$0.02	2,581	2,581	RSMMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$8,233.23	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	21,011.10	10	\$3,980.10	15%	29%	\$0.01	275	275	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	25,613.17	10	\$3,249.30	8%	38%	\$0.01	706	706	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	New	25,974.04	15	\$3,961.45	8%	38%	\$0.01	717	717	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	New	13,470.71	3	\$1,126.77	8%	38%	\$0.01	371	371	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	41,066.38	12	\$11,004.15	8%	38%	\$0.02	1,130	1,130	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	New	10,007.25	3	\$3,385.04	0%	24%	\$0.01	1,092	1,101	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,309.51	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	New	923.88	32	\$11,804.70	15%	52%	\$0.33	157	157	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$1,905.89	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,514.66	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$55.41	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$261.05	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$311.45	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$639.75	0%	0%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$199.51	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$9,623.56	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,068.57	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$9,780.75	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$92.03	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$2.37	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$14.34	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$490.50	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	5,615.36	10	\$2,103.04	15%	25%	\$0.03	331	336	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	61.58	5	\$35.92	15%	38%	\$0.04	9	9	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$4,999.25	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	6,967.22	10	\$15,799.85	15%	40%	\$0.17	1,077	1,096	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	Existing	227.60	5	\$62.79	15%	75%	\$0.02	17	17	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,269.93	10	\$1,255.14	15%	75%	\$0.04	169	171	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,076.92	5	\$1,530.81	15%	75%	\$0.11	392	407	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	703.99	15	\$340.97	15%	50%	\$0.04	30	31	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,350.34	18	\$818.24	15%	50%	\$0.04	57	61	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	481.05	3	\$45.53	15%	50%	\$0.01	21	21	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,388.56	15	\$681.94	15%	50%	\$0.04	59	62	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	Existing	415.97	3	\$2,705.33	10%	35%	\$0.01	335	65	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	Existing	1,636.98	3	\$3,889.88	0%	24%	\$0.01	244	247	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	Existing	561.89	10	\$3,801.75	15%	24%	\$0.03	33	33	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,514.66	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$55.41	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$261.05	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$311.45	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	New	416.25	3	\$2,705.33	10%	35%	\$0.01	245	95	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$639.75	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$199.51	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$9,623.56	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,068.57	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$9,780.75	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$92.03	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$2.37	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$14.34	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$490.50	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	5,630.28	10	\$2,103.04	15%	25%	\$0.03	244	246	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	New	61.37	5	\$35.92	15%	38%	\$0.04	7	7	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$4,999.25	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	New	6,943.04	10	\$15,799.85	15%	40%	\$0.17	797	797	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	New	227.14	5	\$62.79	15%	75%	\$0.02	13	13	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,263.03	10	\$1,255.14	15%	75%	\$0.04	125	125	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	New	1,064.17	5	\$1,530.81	15%	75%	\$0.11	293	293	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	704.50	15	\$340.97	15%	50%	\$0.04	22	23	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	New	1,354.76	18	\$818.24	15%	50%	\$0.04	43	43	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	New	481.05	3	\$45.53	15%	50%	\$0.01	15	15	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,390.76	15	\$681.94	15%	50%	\$0.04	45	45	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	New	1,637.04	3	\$3,385.04	0%	24%	\$0.01	179	181	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	New	143.83	32	\$11,804.70	15%	52%	\$0.33	24	24	6th Plan
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$33,552.08	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	380.87	3	\$3,889.88	0%	24%	\$0.01	10	13	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	130.74	10	\$3,801.75	15%	24%	\$0.03	1	2	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	139.94	15	\$30.21	15%	35%	\$0.01	3	4	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,232.33	20	\$5,083.75	100%	at stock turnover	\$0.09	61	61	BEST Simulation
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$22,934.43	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	New	141.52	3	\$3,385.04	0%	24%	\$0.01	3	3	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	13.30	32	\$11,804.70	15%	52%	\$0.33	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	52.03	15	\$14.48	15%	35%	\$0.02	1	1	6th Plan
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,496.40	20	\$3,200.81	100%	at stock turnover	\$0.10	25	25	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	60,383.49	23	\$99,047.75	2%	at stock turnover	\$0.09	111	108	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	33,179.28	23	\$13,483.36	6%	at stock turnover	\$0.03	135	135	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	14,121.67	10	\$3,925.59	15%	45%	\$0.02	27	31	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,747.00	15	\$1,751.48	15%	60%	\$0.05	8	9	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	799.00	15	\$694.52	15%	75%	\$0.06	3	3	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	30,000.15	15	\$54,050.37	15%	50%	\$0.12	178	201	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	Existing	24,738.09	12	\$46,582.86	15%	50%	\$0.13	142	180	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	Existing	7,548.48	15	\$42,794.94	20%	50%	\$0.12	39	43	BEST Simulation
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	58,280.93	23	\$89,215.93	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	Existing	24,253.24	18	\$28,199.41	15%	75%	\$0.07	37	45	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,540.96	18	\$2,242.60	15%	25%	\$0.05	3	3	BEST Simulation
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	Existing	10,223.42	10	\$18,508.20	18%	30%	\$0.04	33	12	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	18,615.35	45	\$169,820.72	15%	25%	\$0.14	32	36	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	Existing	4,447.38	20	\$4,294.76	15%	25%	\$0.06	8	9	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,435.28	45	\$21,420.86	45%	50%	\$0.06	1	1	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	Existing	47,310.83	23	\$101,625.20	5%	at stock turnover	\$0.17	36	36	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	Existing	6,878.95	3	\$1,264.01	0%	5%	\$0.00	6	7	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$114.72	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	Existing	2,343.50	10	\$5,948.01	15%	24%	\$0.03	4	4	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	48,428.47	23	\$20,400.91	3%	at stock turnover	\$0.03	101	100	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	13,705.23	10	\$3,946.34	15%	45%	\$0.02	12	15	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	18,200.58	4	\$2,374.63	15%	50%	\$0.01	19	24	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,278.22	15	\$2,167.17	15%	60%	\$0.04	4	6	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	698.99	15	\$631.32	15%	75%	\$0.06	1	2	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	46,128.30	23	\$75,224.86	2%	at stock turnover	\$0.09	120	116	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	21,819.37	23	\$1,566.80	6%	at stock turnover	\$0.01	133	135	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	12,795.09	10	\$3,965.91	15%	45%	\$0.02	18	19	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,643.52	15	\$1,176.36	15%	60%	\$0.05	4	4	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,525.27	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	13,593.38	15	\$54,050.37	15%	50%	\$0.25	63	66	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	New	14,222.18	12	\$31,841.56	15%	50%	\$0.14	66	69	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	New	4,221.79	15	\$34,064.03	20%	50%	\$0.11	17	18	BEST Simulation
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	44,489.02	23	\$67,757.78	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	New	15,807.59	18	\$21,180.22	15%	75%	\$0.08	18	20	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,211.79	18	\$1,111.37	15%	25%	\$0.06	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	New	5,509.93	10	\$11,505.97	18%	30%	\$0.05	19	10	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,449.59	45	\$116,851.98	15%	25%	\$0.13	2	2	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	New	2,334.81	20	\$1,641.91	15%	25%	\$0.09	3	3	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.72	45	\$2,594.87	45%	50%	\$0.05	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	New	28,141.10	23	\$60,157.81	5%	at stock turnover	\$0.17	34	34	BEST Simulation
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	New	3,833.37	3	\$1,117.90	0%	5%	\$0.00	3	3	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$307.76	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	New	318.59	32	\$18,712.50	15%	52%	\$0.35	2	2	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	31,540.76	23	\$15,466.67	3%	at stock turnover	\$0.04	98	98	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,364.73	10	\$2,566.98	15%	45%	\$0.02	5	6	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	9,769.96	4	\$1,545.26	15%	50%	\$0.01	8	9	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,311.66	15	\$1,047.90	15%	60%	\$0.05	1	1	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$3,014.74	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$42,794.94	20%	50%	\$0.12	7	12	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.02	15%	25%	\$0.01	8	16	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.70	33%	60%	\$0.06	9	18	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.69	15%	30%	\$0.03	65	129	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	340	349	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	172	176	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	220	575	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$1,264.01	0%	5%	\$0.00	1	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$5,948.01	15%	24%	\$0.03	1	1	6th Plan
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$34,064.03	20%	50%	\$0.11	5	7	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.74	15%	25%	\$0.01	5	8	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.80	44%	60%	\$0.03	4	5	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.74	15%	30%	\$0.03	43	63	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	359	399	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	182	200	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	232	530	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$1,117.90	0%	5%	\$0.00	1	1	BEST Simulation
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$18,712.50	15%	52%	\$0.35	0	1	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	5,468.96	23	\$70,517.58	2%	at stock turnover	\$0.09	10	9	BEST Simulation
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$46,582.86	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	Existing	18,295.78	15	\$42,794.94	20%	50%	\$0.12	104	105	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,544.10	23	\$54,271.27	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	Existing	3,190.31	18	\$28,199.41	15%	75%	\$0.07	5	6	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,867.87	18	\$2,242.60	15%	25%	\$0.05	4	4	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	Existing	73,840.94	45	\$169,820.72	15%	25%	\$0.14	141	142	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	Existing	875.76	20	\$4,294.76	15%	25%	\$0.06	2	2	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	27,763.01	45	\$21,420.86	45%	50%	\$0.06	27	27	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	Existing	16,079.04	3	\$1,264.01	0%	5%	\$0.00	15	15	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$114.72	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	Existing	5,556.09	10	\$5,948.01	15%	24%	\$0.03	10	10	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	8,430.14	23	\$62,185.45	2%	at stock turnover	\$0.09	22	21	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$31,841.56	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	New	17,327.74	15	\$34,064.03	20%	50%	\$0.11	73	73	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,110.81	23	\$41,217.98	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	New	1,988.59	18	\$21,180.22	15%	75%	\$0.08	2	3	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-22.35	18	\$1,111.37	15%	25%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	New	70,177.52	45	\$116,851.98	15%	25%	\$0.13	98	98	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	New	-1,422.64	20	\$1,641.91	15%	25%	\$0.09	-2	-2	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,012.76	45	\$2,594.87	45%	50%	\$0.05	3	3	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	New	15,231.79	3	\$1,117.90	0%	5%	\$0.00	11	11	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$307.76	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	New	1,407.72	32	\$18,712.50	15%	52%	\$0.35	7	7	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$42,794.94	20%	50%	\$0.12	40	64	BEST Simulation
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	2,598	2,679	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,346.57	5	\$447.97	5%	40%	\$0.01	64	125	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,030.36	5	\$597.32	15%	50%	\$0.01	82	163	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,016.06	3%	25%	\$0.06	182	364	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	622.90	16	\$73.92	1%	3%	\$0.01	3	6	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.53	7%	60%	\$0.03	373	694	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$8,449.66	15%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.05	7%	15%	\$0.01	29	52	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.75	10%	25%	\$0.00	2	6	AEG research & analysis
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	1,332	1,430	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	226	646	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.43	3	\$1,264.01	0%	5%	\$0.00	7	14	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$5,948.01	15%	24%	\$0.03	5	7	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$34,064.03	20%	50%	\$0.11	29	42	BEST Simulation
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	2,747	3,061	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,906.83	5	\$447.56	5%	40%	\$0.01	39	58	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,462.13	5	\$596.70	15%	50%	\$0.01	55	75	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.28	4%	25%	\$0.05	124	178	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	557.87	16	\$73.64	1%	3%	\$0.01	2	3	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,402.93	22%	60%	\$0.03	147	211	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$8,449.66	18%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.85	7%	15%	\$0.01	19	27	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.51	5	\$18.62	10%	25%	\$0.00	1	2	AEG research & analysis
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	1,411	1,545	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	238	596	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	New	537.91	3	\$1,117.90	0%	5%	\$0.00	5	7	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$18,712.50	15%	52%	\$0.35	3	4	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$34.35	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	Existing	1,477.10	3	\$6,749.91	5%	39%	\$0.02	120	121	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,283.20	3	\$1,264.01	0%	5%	\$0.00	15	15	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	443.41	10	\$5,948.01	15%	24%	\$0.03	10	10	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$34.35	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	New	1,478.64	3	\$6,749.91	5%	39%	\$0.02	82	82	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	New	1,283.20	3	\$1,117.90	0%	5%	\$0.00	10	10	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	New	119.98	32	\$18,712.50	15%	52%	\$0.35	7	7	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	49,582.46	10	\$1,509.33	15%	75%	\$0.00	3,668	3,668	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	51,379.98	15	\$25,805.00	15%	50%	\$0.03	2,119	2,315	OH - TRM
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	12,953.27	15	\$4,236.78	15%	38%	\$0.02	349	367	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,515.86	5	\$260.29	15%	50%	\$0.01	64	67	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	23,683.70	20	\$18,204.97	15%	50%	\$0.05	940	1,086	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	12,970.35	15	\$4,268.80	15%	38%	\$0.02	354	368	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	27,557.27	10	\$9,475.23	15%	50%	\$0.02	1,158	1,220	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$515.22	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	Existing	21,723.57	15	\$10,040.47	8%	38%	\$0.03	796	835	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	Existing	12,409.55	3	\$1,070.98	8%	38%	\$0.01	450	468	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	35,587.25	15	\$16,064.73	8%	38%	\$0.03	1,249	1,359	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$137.39	15%	50%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	63,694.00	10	\$5,527.59	8%	38%	\$0.01	2,333	2,356	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	Existing	21,496.19	15	\$1,612.24	8%	38%	\$0.01	795	795	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	Existing	10,983.42	3	\$458.62	8%	38%	\$0.00	391	406	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	32,776.06	10	\$4,127.28	8%	38%	\$0.01	1,161	1,212	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	3,108.41	8	\$4,814.59	10%	50%	\$0.11	732	781	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	2,205.46	8	\$1,706.97	5%	25%	\$0.06	260	277	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$216.05	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$6,513.11	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$24.87	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	56,205.59	17	\$4,342.71	5%	6%	\$0.01	345	346	E3T Website
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	8,832.98	10	\$2,040.22	15%	36%	\$0.02	1,123	1,156	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	Existing	53,903.28	17	\$27,676.70	25%	44%	\$0.04	6,136	6,314	RSMMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$8,728.09	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$4,219.27	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	53,397.71	10	\$6,758.01	8%	38%	\$0.01	1,956	1,975	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	Existing	53,939.16	15	\$8,239.32	8%	38%	\$0.01	1,994	1,995	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	Existing	28,193.78	3	\$2,343.65	8%	38%	\$0.01	1,023	1,043	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	87,395.52	12	\$22,887.05	8%	38%	\$0.02	3,153	3,233	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	Existing	21,282.73	3	\$6,749.91	5%	39%	\$0.02	4,303	4,461	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	Existing	19,473.76	3	\$1,264.01	0%	5%	\$0.00	598	605	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,448.27	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	Existing	6,472.41	10	\$5,948.01	15%	24%	\$0.03	364	374	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$3,268.30	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	New	21,068.44	3	\$6,749.91	5%	39%	\$0.02	3,223	3,214	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	New	49,582.46	10	\$1,509.33	15%	75%	\$0.00	2,681	2,681	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	51,067.69	15	\$25,805.00	15%	50%	\$0.03	1,597	1,597	OH - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	12,824.50	15	\$4,236.78	15%	38%	\$0.02	259	259	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,501.83	5	\$260.29	15%	50%	\$0.01	47	47	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	New	23,845.33	20	\$18,204.97	15%	50%	\$0.05	736	744	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	12,845.87	15	\$4,268.80	15%	38%	\$0.02	259	259	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	27,303.97	10	\$9,475.23	15%	50%	\$0.02	857	857	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$515.22	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	New	22,063.01	15	\$10,040.47	8%	38%	\$0.03	593	593	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	New	12,460.93	3	\$1,070.98	8%	38%	\$0.01	336	336	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	34,813.48	15	\$16,064.73	8%	38%	\$0.03	934	934	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$137.39	15%	50%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	63,458.59	10	\$5,527.59	8%	38%	\$0.01	1,714	1,714	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	New	21,496.19	15	\$1,612.24	8%	38%	\$0.01	580	581	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	New	10,811.69	3	\$458.62	8%	38%	\$0.00	291	291	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	New	32,195.48	10	\$4,127.28	8%	38%	\$0.01	867	867	6th Plan
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	3,067.77	8	\$4,814.59	10%	50%	\$0.11	550	550	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2,176.68	8	\$1,706.97	5%	25%	\$0.06	195	195	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$216.05	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$6,513.11	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$24.87	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	56,133.49	17	\$4,342.71	5%	6%	\$0.01	253	253	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	8,657.79	10	\$2,040.22	15%	36%	\$0.02	817	817	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	New	54,915.14	17	\$16,606.06	25%	44%	\$0.02	4,693	4,693	RSMears 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$8,728.09	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$4,219.27	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	53,200.36	10	\$6,758.01	8%	38%	\$0.01	1,437	1,437	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	New	53,949.85	15	\$8,239.32	8%	38%	\$0.01	1,458	1,458	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	New	27,979.64	3	\$2,343.65	8%	38%	\$0.01	755	755	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	New	85,298.00	12	\$22,887.05	8%	38%	\$0.02	2,299	2,299	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	New	19,485.67	3	\$1,117.90	0%	5%	\$0.00	440	439	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,448.27	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	New	1,705.36	32	\$18,712.50	15%	52%	\$0.35	284	284	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$3,268.30	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$3,150.14	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$7.21	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$34.07	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$40.67	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$3,156.60	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$26.04	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,256.25	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$139.52	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,276.79	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$86.97	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$12.02	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	Existing	0.00	10	\$70.62	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$2,420.18	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,074.37	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$52.62	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$4,724.05	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$23,096.43	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	Existing	210.87	5	\$57.09	15%	75%	\$0.02	15	16	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,103.08	10	\$1,141.46	15%	75%	\$0.04	153	156	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	Existing	1,600.26	5	\$2,237.79	15%	75%	\$0.11	581	592	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	4,111.15	15	\$1,965.27	15%	50%	\$0.04	172	178	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	Existing	7,885.24	18	\$4,716.63	15%	50%	\$0.04	325	346	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	Existing	2,768.01	3	\$262.01	15%	50%	\$0.01	119	119	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	8,108.74	15	\$3,930.54	15%	50%	\$0.04	337	352	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	Existing	805.62	3	\$6,749.91	5%	39%	\$0.02	864	169	Energy Management Program Design for PC
Petroleum Refining	Process	Strategic Energy Management	per Facility	Existing	2,394.37	3	\$1,264.01	0%	5%	\$0.00	74	74	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	Existing	825.46	10	\$5,948.01	15%	24%	\$0.03	48	48	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$3,150.14	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$7.21	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$34.07	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$40.67	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Commissioning	per Facility	New	807.21	3	\$6,749.91	5%	39%	\$0.02	633	245	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$3,156.60	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$26.04	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,256.25	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$139.52	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,276.79	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$86.97	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$12.02	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	New	0.00	10	\$70.62	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	New	0.00	10	\$2,420.18	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,074.37	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$52.62	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$4,724.05	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$23,096.43	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	New	211.09	5	\$57.09	15%	75%	\$0.02	11	11	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,103.10	10	\$1,141.46	15%	75%	\$0.04	112	114	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	New	1,595.20	5	\$2,237.79	15%	75%	\$0.11	430	430	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	4,011.08	15	\$1,965.27	15%	50%	\$0.04	127	126	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	New	7,918.33	18	\$4,716.63	15%	50%	\$0.04	244	249	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	New	2,769.15	3	\$262.01	15%	50%	\$0.01	87	87	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	8,235.64	15	\$3,930.54	15%	50%	\$0.04	250	260	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Strategic Energy Management	per Facility	New	2,394.37	3	\$1,117.90	0%	5%	\$0.00	54	54	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	New	215.59	32	\$18,712.50	15%	52%	\$0.35	36	36	6th Plan
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$46,582.86	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	Existing	529.50	3	\$1,264.01	0%	5%	\$0.00	3	4	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	Existing	182.73	10	\$5,948.01	15%	24%	\$0.03	2	2	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	193.95	15	\$41.90	15%	35%	\$0.01	4	5	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,876.06	20	\$7,058.15	100%	at stock turnover	\$0.09	83	83	BEST Simulation
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$31,841.56	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	New	196.87	3	\$1,117.90	0%	5%	\$0.00	1	1	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	New	18.57	32	\$18,712.50	15%	52%	\$0.35	1	1	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	72.14	15	\$19.99	15%	35%	\$0.02	1	1	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,465.94	20	\$4,443.93	100%	at stock turnover	\$0.10	34	34	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	49,333.63	23	\$80,922.53	2%	at stock turnover	\$0.09	145	140	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	27,107.64	23	\$11,015.98	6%	at stock turnover	\$0.03	175	176	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,557.64	10	\$3,207.22	15%	45%	\$0.02	35	40	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,248.23	15	\$1,431.06	15%	60%	\$0.05	10	12	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	653.93	15	\$567.39	15%	75%	\$0.06	4	5	BEST Simulation
Stone Clay Glass Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	23,617.66	15	\$121,541.47	15%	50%	\$0.34	220	252	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	20,870.01	12	\$38,058.48	15%	50%	\$0.13	197	238	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	Existing	6,177.89	15	\$35,211.34	20%	50%	\$0.12	50	57	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	47,615.82	23	\$72,889.88	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	19,849.56	18	\$23,039.12	15%	75%	\$0.07	48	58	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,261.17	18	\$1,832.24	15%	25%	\$0.05	3	4	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	Existing	8,367.15	10	\$15,121.32	18%	30%	\$0.04	43	16	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	15,235.33	45	\$138,744.35	15%	25%	\$0.14	42	47	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,639.87	20	\$3,508.92	15%	25%	\$0.06	10	11	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,174.67	45	\$17,501.01	45%	50%	\$0.06	2	2	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	Existing	38,653.19	23	\$83,028.32	5%	at stock turnover	\$0.17	47	47	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$257.97	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	Existing	1,917.99	10	\$3,633.73	15%	24%	\$0.03	5	5	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	39,566.32	23	\$16,667.65	3%	at stock turnover	\$0.03	131	130	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,216.74	10	\$3,224.22	15%	45%	\$0.02	16	20	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,895.90	4	\$1,940.06	15%	50%	\$0.01	25	31	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,682.98	15	\$1,770.60	15%	60%	\$0.04	6	7	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	572.07	15	\$515.79	15%	75%	\$0.06	2	2	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	37,687.06	23	\$61,459.10	2%	at stock turnover	\$0.09	157	151	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	17,826.54	23	\$273.87	6%	at stock turnover	\$0.00	174	176	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	10,467.59	10	\$3,240.13	15%	45%	\$0.02	24	25	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,344.55	15	\$960.99	15%	60%	\$0.05	5	5	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$3,429.82	15%	75%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	11,110.23	15	\$121,541.47	15%	50%	\$0.68	82	86	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	New	11,635.03	12	\$26,014.79	15%	50%	\$0.14	86	90	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	New	3,453.81	15	\$28,077.19	20%	50%	\$0.11	22	23	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	36,347.76	23	\$55,358.46	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	New	12,932.03	18	\$17,304.37	15%	75%	\$0.08	24	26	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	991.35	18	\$908.01	15%	25%	\$0.06	2	2	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	New	4,507.64	10	\$9,400.46	18%	30%	\$0.05	25	13	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,185.89	45	\$95,468.60	15%	25%	\$0.13	3	3	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	New	1,910.09	20	\$1,341.47	15%	25%	\$0.09	4	4	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.41	45	\$2,120.02	45%	50%	\$0.05	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	New	22,991.42	23	\$49,149.24	5%	at stock turnover	\$0.17	44	44	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$692.05	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	New	270.39	32	\$11,037.13	15%	52%	\$0.32	2	2	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	25,768.96	23	\$12,636.35	3%	at stock turnover	\$0.04	128	128	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,025.00	10	\$2,097.32	15%	45%	\$0.02	7	7	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,992.72	4	\$1,262.53	15%	50%	\$0.01	10	11	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,073.05	15	\$856.10	15%	60%	\$0.05	2	2	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$6,779.17	15%	75%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	Existing	107.40	15	\$35,211.34	20%	50%	\$0.12	11	19	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.94	5	\$66.12	15%	25%	\$0.01	13	26	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.99	10	\$154.78	33%	60%	\$0.06	14	29	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,869.79	10	\$1,056.77	15%	30%	\$0.03	104	207	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	542	557	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	274	280	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	351	917	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.08	10	\$3,633.73	15%	24%	\$0.03	1	2	6th Plan
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	New	93.43	15	\$28,077.19	20%	50%	\$0.11	8	11	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.70	5	\$65.81	15%	25%	\$0.01	9	13	Illinois TRM
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.72	10	\$94.85	44%	60%	\$0.03	6	8	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,621.06	10	\$1,051.67	15%	30%	\$0.03	68	100	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	573	636	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	291	318	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	371	845	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.59	32	\$11,037.13	15%	52%	\$0.32	1	1	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,468.17	23	\$57,613.24	2%	at stock turnover	\$0.09	13	12	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$38,058.48	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	Existing	14,973.93	15	\$35,211.34	20%	50%	\$0.12	136	137	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,261.54	23	\$44,339.91	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	Existing	2,611.06	18	\$23,039.12	15%	75%	\$0.07	7	7	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,528.73	18	\$1,832.24	15%	25%	\$0.05	5	5	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	60,434.13	45	\$138,744.35	15%	25%	\$0.14	184	185	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	716.76	20	\$3,508.92	15%	25%	\$0.06	2	2	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	22,722.28	45	\$17,501.01	45%	50%	\$0.06	35	35	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$257.97	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	Existing	4,547.31	10	\$3,633.73	15%	24%	\$0.03	13	13	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,887.47	23	\$50,805.84	2%	at stock turnover	\$0.09	28	27	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$26,014.79	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	New	14,175.81	15	\$28,077.19	20%	50%	\$0.11	95	95	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,992.57	23	\$33,675.30	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	New	1,626.86	18	\$17,304.37	15%	75%	\$0.08	3	3	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-18.29	18	\$908.01	15%	25%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	New	57,412.21	45	\$95,468.60	15%	25%	\$0.13	128	128	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	New	-1,163.86	20	\$1,341.47	15%	25%	\$0.09	-3	-3	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	3,282.84	45	\$2,120.02	45%	50%	\$0.05	4	4	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$692.05	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	New	1,151.66	32	\$11,037.13	15%	52%	\$0.32	10	10	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	Existing	580.88	15	\$35,211.34	20%	50%	\$0.12	63	103	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	4,143	4,274	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,350.60	5	\$447.98	5%	40%	\$0.01	102	200	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,035.56	5	\$597.36	15%	50%	\$0.01	131	260	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,624.94	12	\$4,016.06	3%	25%	\$0.06	291	582	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	622.90	16	\$73.99	1%	3%	\$0.01	5	9	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,013.86	10	\$2,337.53	7%	60%	\$0.03	596	1,109	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$19,000.51	15%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,383.29	8	\$347.11	7%	15%	\$0.01	46	83	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.69	10%	25%	\$0.00	3	10	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	2,124	2,281	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	360	1,031	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.80	10	\$3,633.73	15%	24%	\$0.03	7	11	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	New	540.39	15	\$28,077.19	20%	50%	\$0.11	46	67	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	4,382	4,882	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,828.90	5	\$447.52	5%	40%	\$0.01	63	88	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,545.76	5	\$596.74	15%	50%	\$0.01	88	123	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,365.95	12	\$3,775.23	4%	25%	\$0.05	197	285	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	558.60	16	\$73.68	1%	3%	\$0.01	3	5	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,610.00	10	\$2,403.02	22%	60%	\$0.03	234	338	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$19,000.51	18%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,240.16	8	\$337.84	7%	15%	\$0.01	30	43	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.73	5	\$18.54	10%	25%	\$0.00	2	3	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	2,251	2,464	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	380	951	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.92	32	\$11,037.13	15%	52%	\$0.32	5	7	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$77.24	0%	0%	\$10.00	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	Existing	2,080.47	3	\$2,536.65	10%	40%	\$0.02	239	239	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	624.53	10	\$3,633.73	15%	24%	\$0.03	22	22	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$77.24	0%	0%	\$10.00	0	0	MI - TRM
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	New	2,081.77	3	\$2,536.65	10%	40%	\$0.02	162	162	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	169.12	32	\$11,037.13	15%	52%	\$0.32	16	16	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,239.01	10	\$98.56	15%	75%	\$0.00	382	382	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	3,430.78	15	\$1,685.79	15%	50%	\$0.03	224	245	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	842.38	15	\$276.82	15%	38%	\$0.02	36	38	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	99.20	5	\$16.99	15%	50%	\$0.01	7	7	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,582.07	20	\$1,189.31	15%	50%	\$0.05	101	115	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	854.06	15	\$278.83	15%	38%	\$0.02	36	39	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	Existing	1,451.50	15	\$655.90	8%	38%	\$0.03	84	88	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	812.08	3	\$69.98	8%	38%	\$0.01	47	49	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and	per Facility	Existing	2,378.03	15	\$1,049.51	8%	38%	\$0.03	132	144	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
		Improvements - Optimized System											
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	26,705.90	10	\$2,313.58	8%	38%	\$0.01	1,560	1,576	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	Existing	8,997.26	15	\$674.75	8%	38%	\$0.01	530	531	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	Existing	4,605.17	3	\$192.01	8%	38%	\$0.00	261	272	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	13,742.45	10	\$1,727.50	8%	38%	\$0.01	776	811	6th Plan
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,032.80	8	\$1,550.32	10%	50%	\$0.11	393	411	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	732.78	8	\$549.62	5%	25%	\$0.06	139	146	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$485.83	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$324.71	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.24	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	18,217.91	17	\$1,398.47	5%	6%	\$0.01	179	179	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,880.09	10	\$656.99	15%	36%	\$0.02	580	599	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	17,860.56	17	\$8,912.32	25%	44%	\$0.04	3,240	3,337	RSMMeans 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$435.16	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$210.40	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	6,325.74	10	\$799.26	8%	38%	\$0.01	370	373	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	Existing	6,389.88	15	\$974.43	8%	38%	\$0.01	377	377	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	Existing	3,339.96	3	\$277.13	8%	38%	\$0.01	193	197	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	10,353.26	12	\$2,706.57	8%	38%	\$0.02	588	611	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	Existing	7,065.43	3	\$2,536.65	10%	40%	\$0.02	2,097	2,084	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$122.04	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	Existing	2,146.93	10	\$3,633.73	15%	24%	\$0.03	192	198	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,088.36	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	New	7,001.96	3	\$2,536.65	10%	40%	\$0.02	1,519	1,506	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	3,239.01	10	\$98.56	15%	75%	\$0.00	279	279	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	3,406.99	15	\$1,685.79	15%	50%	\$0.03	168	170	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	838.89	15	\$276.82	15%	38%	\$0.02	27	27	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	98.24	5	\$16.99	15%	50%	\$0.01	5	5	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	1,590.76	20	\$1,189.31	15%	50%	\$0.05	78	79	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	840.29	15	\$278.83	15%	38%	\$0.02	27	27	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	New	1,439.45	15	\$655.90	8%	38%	\$0.03	63	62	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	New	815.11	3	\$69.98	8%	38%	\$0.01	35	35	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	2,355.20	15	\$1,049.51	8%	38%	\$0.03	99	101	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	26,596.23	10	\$2,313.58	8%	38%	\$0.01	1,146	1,146	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	New	8,997.26	15	\$674.75	8%	38%	\$0.01	388	388	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	New	4,531.29	3	\$192.01	8%	38%	\$0.00	195	195	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	13,493.45	10	\$1,727.50	8%	38%	\$0.01	580	580	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,020.80	8	\$1,550.32	10%	50%	\$0.11	293	293	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	724.29	8	\$549.62	5%	25%	\$0.06	104	104	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$485.83	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$324.71	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.24	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	18,208.36	17	\$1,398.47	5%	6%	\$0.01	131	131	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,823.65	10	\$656.99	15%	36%	\$0.02	421	425	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	New	17,910.20	17	\$5,347.33	25%	44%	\$0.02	2,443	2,443	RSMears 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$435.16	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$210.40	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	6,299.76	10	\$799.26	8%	38%	\$0.01	271	271	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	New	6,388.52	15	\$974.43	8%	38%	\$0.01	275	275	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	New	3,313.23	3	\$277.13	8%	38%	\$0.01	143	143	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	10,100.60	12	\$2,706.57	8%	38%	\$0.02	430	434	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$122.04	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	New	567.46	32	\$11,037.13	15%	52%	\$0.32	151	151	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,088.36	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$372.60	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$11.74	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$54.99	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$65.65	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$7,098.16	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$42.02	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,027.03	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$225.07	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,060.09	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$200.05	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$27.03	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$158.80	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$5,442.18	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,911.32	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$66.89	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$10,866.44	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$29,384.98	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	Existing	533.17	5	\$143.97	15%	75%	\$0.02	62	63	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	5,281.85	10	\$2,880.97	15%	75%	\$0.04	618	623	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	Existing	2,075.76	5	\$2,847.14	15%	75%	\$0.11	1,210	1,225	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	953.49	15	\$454.93	15%	50%	\$0.04	64	66	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	Existing	1,828.80	18	\$1,091.99	15%	50%	\$0.04	121	128	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	Existing	641.98	3	\$60.71	15%	50%	\$0.01	43	44	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,880.64	15	\$910.02	15%	50%	\$0.04	125	130	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	Existing	761.55	3	\$2,536.65	10%	40%	\$0.02	1,132	225	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	Existing	1,054.04	10	\$3,633.73	15%	24%	\$0.03	96	97	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$372.60	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$11.74	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$54.99	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$65.65	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Commissioning	per Facility	New	762.20	3	\$2,536.65	10%	40%	\$0.02	827	325	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$7,098.16	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$42.02	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,027.03	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$225.07	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,060.09	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$200.05	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$27.03	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	New	0.00	10	\$158.80	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$5,442.18	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,911.32	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$66.89	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$10,866.44	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$29,384.98	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	New	533.50	5	\$143.97	15%	75%	\$0.02	46	46	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	5,266.03	10	\$2,880.97	15%	75%	\$0.04	454	454	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	New	2,068.03	5	\$2,847.14	15%	75%	\$0.11	891	891	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	954.65	15	\$454.93	15%	50%	\$0.04	47	48	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	New	1,835.72	18	\$1,091.99	15%	50%	\$0.04	90	92	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	New	641.98	3	\$60.71	15%	50%	\$0.01	32	32	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,884.54	15	\$910.02	15%	50%	\$0.04	93	95	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	New	279.49	32	\$11,037.13	15%	52%	\$0.32	75	75	6th Plan
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$38,058.48	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	149.55	10	\$3,633.73	15%	24%	\$0.03	2	3	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	158.73	15	\$34.14	15%	35%	\$0.01	5	6	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,800.77	20	\$5,766.54	100%	at stock turnover	\$0.09	108	109	BEST Simulation
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$26,014.79	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	New	15.19	32	\$11,037.13	15%	52%	\$0.32	1	1	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	59.02	15	\$16.37	15%	35%	\$0.02	2	2	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,831.69	20	\$3,630.71	100%	at stock turnover	\$0.10	44	45	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	55,667.15	23	\$91,311.48	2%	at stock turnover	\$0.09	651	630	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	30,587.76	23	\$12,430.22	6%	at stock turnover	\$0.03	789	793	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	13,018.67	10	\$3,618.94	15%	45%	\$0.02	158	179	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,532.44	15	\$1,614.72	15%	60%	\$0.05	46	52	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	736.59	15	\$640.28	15%	75%	\$0.06	18	20	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	26,603.51	15	\$70,695.03	15%	50%	\$0.18	989	1,133	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	23,508.40	12	\$42,944.45	15%	50%	\$0.13	885	1,071	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	6,958.89	15	\$39,558.13	20%	50%	\$0.12	226	254	BEST Simulation
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	53,728.81	23	\$82,247.58	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	22,358.90	18	\$25,996.87	15%	75%	\$0.07	215	262	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,420.60	18	\$2,067.48	15%	25%	\$0.05	15	18	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	9,424.91	10	\$17,062.59	18%	30%	\$0.04	192	72	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	17,161.37	45	\$156,556.61	15%	25%	\$0.14	187	209	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	4,100.01	20	\$3,959.30	15%	25%	\$0.06	44	50	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,323.17	45	\$19,747.80	45%	50%	\$0.06	7	8	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	43,615.54	23	\$93,687.61	5%	at stock turnover	\$0.17	211	212	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	6,341.66	3	\$630.76	0%	5%	\$0.00	35	41	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$150.05	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	2,160.46	10	\$2,903.55	15%	24%	\$0.02	22	25	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	44,645.90	23	\$18,807.47	3%	at stock turnover	\$0.03	589	586	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	12,634.76	10	\$3,638.08	15%	45%	\$0.02	72	91	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	16,779.00	4	\$2,189.14	15%	50%	\$0.01	113	139	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,022.17	15	\$1,997.93	15%	60%	\$0.04	26	33	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	644.40	15	\$581.97	15%	75%	\$0.06	7	9	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	42,525.38	23	\$69,349.31	2%	at stock turnover	\$0.09	706	678	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	20,115.13	23	\$29.64	6%	at stock turnover	\$0.00	781	790	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	11,795.71	10	\$3,656.14	15%	45%	\$0.02	108	113	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,515.15	15	\$1,084.42	15%	60%	\$0.05	21	22	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,994.97	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	12,519.98	15	\$70,695.03	15%	50%	\$0.35	369	384	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	13,111.34	12	\$29,354.52	15%	50%	\$0.14	388	403	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	New	3,892.04	15	\$31,508.71	20%	50%	\$0.11	99	103	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	41,014.14	23	\$62,465.45	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	14,572.92	18	\$19,525.86	15%	75%	\$0.08	106	115	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,117.14	18	\$1,024.57	15%	25%	\$0.06	9	10	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	5,079.57	10	\$10,607.22	18%	30%	\$0.05	114	57	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,336.36	45	\$107,725.11	15%	25%	\$0.13	11	12	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	2,152.44	20	\$1,513.73	15%	25%	\$0.09	18	19	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.59	45	\$2,392.20	45%	50%	\$0.05	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	25,943.09	23	\$55,459.09	5%	at stock turnover	\$0.17	197	200	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	3,533.96	3	\$496.07	0%	5%	\$0.00	15	16	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$402.53	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	304.69	32	\$8,304.15	15%	52%	\$0.30	10	10	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	29,077.22	23	\$14,258.62	3%	at stock turnover	\$0.04	575	575	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,789.50	10	\$2,366.50	15%	45%	\$0.02	30	33	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	9,006.87	4	\$1,424.50	15%	50%	\$0.01	47	51	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,209.21	15	\$965.99	15%	60%	\$0.05	8	9	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$3,943.13	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$39,558.13	20%	50%	\$0.12	46	76	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.04	15%	25%	\$0.01	52	103	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.72	33%	60%	\$0.06	54	114	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.74	15%	30%	\$0.03	412	822	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	2,160	2,220	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	1,093	1,118	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	1,399	3,653	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$630.76	0%	5%	\$0.00	8	17	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$2,903.55	15%	24%	\$0.02	5	8	6th Plan
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$31,508.71	20%	50%	\$0.11	31	46	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.77	15%	25%	\$0.01	34	50	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.79	44%	60%	\$0.03	22	33	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.71	15%	30%	\$0.03	270	400	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	2,284	2,536	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	1,159	1,268	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	1,478	3,369	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$496.07	0%	5%	\$0.00	5	7	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$8,304.15	15%	52%	\$0.30	3	5	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	5,041.80	23	\$65,009.70	2%	at stock turnover	\$0.09	58	56	BEST Simulation
Transportation Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$42,944.45	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	Existing	16,866.76	15	\$39,558.13	20%	50%	\$0.12	608	617	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,423.50	23	\$50,032.33	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	2,941.12	18	\$25,996.87	15%	75%	\$0.07	32	33	AEG research & analysis
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,721.98	18	\$2,067.48	15%	25%	\$0.05	21	21	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	68,073.48	45	\$156,556.61	15%	25%	\$0.14	825	829	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	807.36	20	\$3,959.30	15%	25%	\$0.06	10	10	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	25,594.54	45	\$19,747.80	45%	50%	\$0.06	155	156	BEST Simulation
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	14,823.17	3	\$630.76	0%	5%	\$0.00	90	91	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$150.05	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	5,122.12	10	\$2,903.55	15%	24%	\$0.02	58	59	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,771.69	23	\$57,328.37	2%	at stock turnover	\$0.09	128	122	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$29,354.52	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	New	15,974.33	15	\$31,508.71	20%	50%	\$0.11	426	426	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,633.52	23	\$37,998.58	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	1,833.27	18	\$19,525.86	15%	75%	\$0.08	15	15	AEG research & analysis
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-20.61	18	\$1,024.57	15%	25%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	64,696.20	45	\$107,725.11	15%	25%	\$0.13	576	576	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	-1,311.52	20	\$1,513.73	15%	25%	\$0.09	-12	-12	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	3,699.34	45	\$2,392.20	45%	50%	\$0.05	16	16	BEST Simulation
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	14,042.09	3	\$496.07	0%	5%	\$0.00	62	63	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$402.53	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,297.77	32	\$8,304.15	15%	52%	\$0.30	43	43	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$39,558.13	20%	50%	\$0.12	252	409	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	16,514	17,035	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,346.57	5	\$448.00	5%	40%	\$0.01	383	795	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,030.36	5	\$597.33	15%	50%	\$0.01	544	1,035	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,016.00	3%	25%	\$0.06	1,157	2,314	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$73.95	1%	3%	\$0.01	19	38	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.57	7%	60%	\$0.03	2,371	4,412	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$11,051.71	15%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.10	7%	15%	\$0.01	182	331	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.69	10%	25%	\$0.00	12	40	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	8,468	9,090	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	1,434	4,109	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$630.76	0%	5%	\$0.00	47	92	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$2,903.55	15%	24%	\$0.02	29	44	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$31,508.71	20%	50%	\$0.11	184	265	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	17,466	19,459	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,906.83	5	\$447.55	5%	40%	\$0.01	262	369	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,462.13	5	\$596.70	15%	50%	\$0.01	337	475	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.28	4%	25%	\$0.05	786	1,134	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	557.87	16	\$73.68	1%	3%	\$0.01	13	19	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,402.98	22%	60%	\$0.03	932	1,344	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$11,051.71	18%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.84	7%	15%	\$0.01	118	170	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.51	5	\$18.60	10%	25%	\$0.00	7	14	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	8,972	9,821	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	1,514	3,789	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	537.91	3	\$496.07	0%	5%	\$0.00	31	45	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$8,304.15	15%	52%	\$0.30	19	27	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$44.93	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,347.04	3	\$892.04	5%	39%	\$0.02	699	699	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,170.21	3	\$630.76	0%	5%	\$0.00	89	89	BEST Simulation
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	404.36	10	\$2,903.55	15%	24%	\$0.02	57	58	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$44.93	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	1,348.44	3	\$892.04	5%	39%	\$0.02	474	474	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,170.21	3	\$496.07	0%	5%	\$0.00	60	60	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	109.41	32	\$8,304.15	15%	52%	\$0.30	42	42	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	953.21	10	\$29.02	15%	75%	\$0.00	448	448	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	977.00	15	\$496.07	15%	50%	\$0.03	250	281	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	249.02	15	\$81.50	15%	38%	\$0.02	42	45	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	29.14	5	\$5.03	15%	50%	\$0.01	8	8	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	455.31	20	\$349.97	15%	50%	\$0.05	115	133	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	249.35	15	\$82.03	15%	38%	\$0.02	42	45	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	529.45	10	\$182.13	15%	50%	\$0.02	139	149	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$673.89	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	427.33	15	\$193.00	8%	38%	\$0.03	93	104	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	238.57	3	\$20.58	8%	38%	\$0.01	55	57	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	673.77	15	\$308.82	8%	38%	\$0.03	153	164	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$179.70	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	4,236.58	10	\$367.67	8%	38%	\$0.01	987	996	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	1,426.51	15	\$107.19	8%	38%	\$0.01	335	335	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	730.56	3	\$30.46	8%	38%	\$0.00	165	172	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	2,180.09	10	\$274.50	8%	38%	\$0.01	491	513	6th Plan
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	292.55	8	\$407.57	10%	50%	\$0.11	357	371	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	207.57	8	\$144.48	5%	25%	\$0.05	127	132	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$282.58	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$399.39	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.53	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	5,150.60	17	\$367.58	5%	6%	\$0.01	161	161	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	816.26	10	\$172.69	15%	36%	\$0.02	533	540	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	5,071.44	17	\$2,342.69	25%	44%	\$0.04	2,949	3,021	RSMMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$535.24	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$258.77	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$253.20	8%	38%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$308.64	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$87.78	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$857.36	8%	38%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	2,003.15	3	\$892.04	5%	39%	\$0.02	2,151	2,135	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,784.55	3	\$630.76	0%	5%	\$0.00	279	280	BEST Simulation
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$150.14	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	610.21	10	\$2,903.55	15%	24%	\$0.02	175	179	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$547.64	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	New	1,843.52	3	\$892.04	5%	39%	\$0.02	1,798	1,792	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	953.21	10	\$29.02	15%	75%	\$0.00	328	328	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	981.76	15	\$496.07	15%	50%	\$0.03	193	195	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	246.55	15	\$81.50	15%	38%	\$0.02	32	32	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	28.87	5	\$5.03	15%	50%	\$0.01	6	6	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	458.42	20	\$349.97	15%	50%	\$0.05	90	91	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	246.96	15	\$82.03	15%	38%	\$0.02	32	32	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	524.91	10	\$182.13	15%	50%	\$0.02	104	105	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$673.89	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	424.15	15	\$193.00	8%	38%	\$0.03	72	72	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	239.56	3	\$20.58	8%	38%	\$0.01	41	41	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	669.28	15	\$308.82	8%	38%	\$0.03	113	114	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$179.70	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	4,220.92	10	\$367.67	8%	38%	\$0.01	725	725	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	New	1,427.90	15	\$107.19	8%	38%	\$0.01	245	245	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	719.14	3	\$30.46	8%	38%	\$0.00	123	123	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	2,141.47	10	\$274.50	8%	38%	\$0.01	367	367	6th Plan
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	268.43	8	\$407.57	10%	50%	\$0.11	307	307	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	190.46	8	\$144.48	5%	25%	\$0.06	109	109	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$282.58	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$399.39	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.53	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,783.17	17	\$367.58	5%	6%	\$0.01	137	137	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	744.48	10	\$172.69	15%	36%	\$0.02	447	447	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,722.21	17	\$1,405.63	25%	44%	\$0.02	2,568	2,568	RSMMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$535.24	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$258.77	0%	0%	\$10.00	0	0	6th Plan

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Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	1,993.02	10	\$253.20	8%	38%	\$0.01	342	342	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	2,021.10	15	\$308.64	8%	38%	\$0.01	347	347	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,048.19	3	\$87.78	8%	38%	\$0.01	180	180	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,195.48	12	\$857.36	8%	38%	\$0.02	548	548	6th Plan
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	1,662.68	3	\$496.07	0%	5%	\$0.00	238	238	BEST Simulation
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$150.14	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	149.22	32	\$8,304.15	15%	52%	\$0.30	158	158	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$547.64	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$117.97	0%	0%	\$10.00	0	0	PA - TRM
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$19.14	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$90.03	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$107.46	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,128.67	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$68.83	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$3,319.92	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$368.57	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$3,374.10	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$46.99	0%	0%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$15.72	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$92.37	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,165.46	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,251.99	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$21.38	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,553.22	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$9,405.55	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	165.15	5	\$44.66	15%	75%	\$0.02	77	78	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,634.62	10	\$893.93	15%	75%	\$0.04	761	769	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	658.17	5	\$911.27	15%	75%	\$0.11	1,523	1,548	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	804.42	15	\$384.56	15%	50%	\$0.04	214	221	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,542.88	18	\$922.86	15%	50%	\$0.04	405	430	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	541.61	3	\$51.31	15%	50%	\$0.01	144	149	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,586.61	15	\$769.04	15%	50%	\$0.04	420	438	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	274.41	3	\$892.04	5%	39%	\$0.02	1,857	366	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	975.06	3	\$630.76	0%	5%	\$0.00	191	191	BEST Simulation
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	336.56	10	\$2,903.55	15%	24%	\$0.02	121	124	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$117.97	0%	0%	\$10.00	0	0	PA - TRM
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$19.14	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$90.03	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$107.46	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	New	344.87	3	\$892.04	5%	39%	\$0.02	1,092	466	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,128.67	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$68.83	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$3,319.92	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$368.57	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$3,374.10	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$46.99	0%	0%	\$10.00	0	0	MT - IRP 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$15.72	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$92.37	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,165.46	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,251.99	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$21.38	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,553.22	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$9,405.55	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	165.32	5	\$44.66	15%	75%	\$0.02	56	57	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	1,629.83	10	\$893.93	15%	75%	\$0.04	560	560	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	720.15	5	\$911.27	15%	75%	\$0.10	989	989	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	805.72	15	\$384.56	15%	50%	\$0.04	158	161	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	1,549.36	18	\$922.86	15%	50%	\$0.04	303	310	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	541.83	3	\$51.31	15%	50%	\$0.01	109	109	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,590.56	15	\$769.04	15%	50%	\$0.04	312	319	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	New	1,071.88	3	\$496.07	0%	5%	\$0.00	123	123	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	97.33	32	\$8,304.15	15%	52%	\$0.30	83	83	6th Plan
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$42,944.45	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	488.15	3	\$630.76	0%	5%	\$0.00	16	22	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	168.45	10	\$2,903.55	15%	24%	\$0.02	10	12	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	178.80	15	\$38.64	15%	35%	\$0.01	24	28	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,417.10	20	\$6,506.86	100%	at stock turnover	\$0.09	487	489	BEST Simulation
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$29,354.52	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	181.49	3	\$496.07	0%	5%	\$0.00	5	5	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	17.12	32	\$8,304.15	15%	52%	\$0.30	4	4	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	66.50	15	\$18.42	15%	35%	\$0.02	7	8	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,195.23	20	\$4,096.83	100%	at stock turnover	\$0.10	200	201	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	43,492.22	23	\$71,340.80	2%	at stock turnover	\$0.09	32	31	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	23,897.93	23	\$9,711.62	6%	at stock turnover	\$0.03	39	39	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,171.37	10	\$2,827.46	15%	45%	\$0.02	8	9	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,978.57	15	\$1,261.55	15%	60%	\$0.05	2	3	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	575.49	15	\$500.24	15%	75%	\$0.06	1	1	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	20,785.07	15	\$65,002.58	15%	50%	\$0.21	48	55	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	Existing	18,366.90	12	\$33,552.09	15%	50%	\$0.13	43	52	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	Existing	5,436.92	15	\$31,202.39	20%	50%	\$0.12	11	12	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	41,977.81	23	\$64,259.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	Existing	17,468.80	18	\$20,311.08	15%	75%	\$0.07	11	13	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,109.90	18	\$1,615.32	15%	25%	\$0.05	1	1	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	Existing	7,363.59	10	\$13,330.82	18%	30%	\$0.04	9	4	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	13,408.02	45	\$122,316.22	15%	25%	\$0.14	9	10	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,203.30	20	\$3,093.41	15%	25%	\$0.06	2	2	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,033.78	45	\$15,428.78	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	RTU - EER 12.0	per Facility	Existing	34,076.42	23	\$73,197.25	5%	at stock turnover	\$0.17	10	10	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	Existing	4,954.68	3	\$852.93	0%	5%	\$0.00	2	2	BEST Simulation
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$172.50	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	Existing	1,687.95	10	\$4,007.14	15%	24%	\$0.03	1	1	6th Plan
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	34,881.42	23	\$14,694.10	3%	at stock turnover	\$0.03	29	29	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,871.42	10	\$2,842.42	15%	45%	\$0.02	4	4	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,109.28	4	\$1,710.41	15%	50%	\$0.01	6	7	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,361.19	15	\$1,560.95	15%	60%	\$0.04	1	2	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	503.46	15	\$454.72	15%	75%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	33,224.68	23	\$54,181.96	2%	at stock turnover	\$0.09	35	33	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	15,715.76	23	\$8,207.20	6%	at stock turnover	\$0.04	38	39	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	9,215.88	10	\$2,856.54	15%	45%	\$0.02	5	6	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,183.77	15	\$847.23	15%	60%	\$0.05	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,292.94	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	9,781.74	15	\$65,002.58	15%	50%	\$0.41	18	19	BEST Simulation
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	New	10,243.76	12	\$22,934.39	15%	50%	\$0.14	19	20	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	New	3,040.82	15	\$24,912.23	20%	50%	\$0.11	5	5	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	32,043.96	23	\$48,803.67	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	New	11,385.68	18	\$15,255.37	15%	75%	\$0.08	5	6	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	872.81	18	\$800.47	15%	25%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	New	3,968.62	10	\$8,287.33	18%	30%	\$0.05	6	3	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,044.09	45	\$84,164.63	15%	25%	\$0.13	1	1	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	New	1,681.68	20	\$1,182.65	15%	25%	\$0.09	1	1	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.24	45	\$1,868.95	45%	50%	\$0.05	0	0	BEST Simulation
Wastewater	Cooling	RTU - EER 12.0	per Facility	New	20,269.10	23	\$43,329.67	5%	at stock turnover	\$0.17	10	10	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	New	2,761.05	3	\$747.76	0%	5%	\$0.00	1	1	BEST Simulation
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$462.65	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	New	238.05	32	\$12,517.04	15%	52%	\$0.51	0	0	6th Plan
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	22,717.76	23	\$11,140.13	3%	at stock turnover	\$0.04	28	28	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,304.57	10	\$1,848.95	15%	45%	\$0.02	1	2	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,036.98	4	\$1,113.01	15%	50%	\$0.01	2	2	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	944.75	15	\$754.78	15%	60%	\$0.05	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$4,532.00	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$31,202.39	20%	50%	\$0.12	3	5	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.01	15%	25%	\$0.01	3	6	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.74	33%	60%	\$0.06	3	7	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.75	15%	30%	\$0.03	26	52	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	135	139	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	69	70	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	88	229	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$852.93	0%	5%	\$0.00	0	1	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$4,007.14	15%	24%	\$0.03	0	0	6th Plan
Wastewater	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$24,912.23	20%	50%	\$0.11	2	3	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.76	15%	25%	\$0.01	2	3	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.76	44%	60%	\$0.03	1	2	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.71	15%	30%	\$0.03	17	25	AEG research & analysis
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	143	159	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	73	79	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	93	211	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$747.76	0%	5%	\$0.00	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$12,517.04	15%	52%	\$0.51	0	0	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	3,939.11	23	\$50,791.47	2%	at stock turnover	\$0.09	3	3	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$33,552.09	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	Existing	13,177.85	15	\$31,202.39	20%	50%	\$0.12	30	30	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,112.16	23	\$39,089.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	Existing	2,297.87	18	\$20,311.08	15%	75%	\$0.07	2	2	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,345.36	18	\$1,615.32	15%	25%	\$0.05	1	1	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	Existing	53,185.17	45	\$122,316.22	15%	25%	\$0.14	40	41	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	Existing	630.78	20	\$3,093.41	15%	25%	\$0.06	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	19,996.78	45	\$15,428.78	45%	50%	\$0.06	8	8	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	Existing	11,581.20	3	\$852.93	0%	5%	\$0.00	4	4	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$172.50	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Heating	Transformer - High Efficiency	per Facility	Existing	4,001.86	10	\$4,007.14	15%	24%	\$0.03	3	3	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,071.95	23	\$44,790.11	2%	at stock turnover	\$0.09	6	6	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$22,934.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	New	12,480.60	15	\$24,912.23	20%	50%	\$0.11	21	21	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,401.42	23	\$29,687.94	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	New	1,432.32	18	\$15,255.37	15%	75%	\$0.08	1	1	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-16.10	18	\$800.47	15%	25%	\$0.06	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	New	50,546.54	45	\$84,164.63	15%	25%	\$0.13	28	28	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	New	-1,024.68	20	\$1,182.65	15%	25%	\$0.09	-1	-1	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	New	2,890.26	45	\$1,868.95	45%	50%	\$0.05	1	1	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	New	10,970.95	3	\$747.76	0%	5%	\$0.00	3	3	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$462.65	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Heating	Transformer - High Efficiency	per Facility	New	1,013.94	32	\$12,517.04	15%	52%	\$0.51	2	2	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$31,202.39	20%	50%	\$0.12	16	26	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	1,035	1,068	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,248.17	5	\$447.95	5%	40%	\$0.01	26	48	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,128.76	5	\$597.32	15%	50%	\$0.01	33	66	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,016.07	3%	25%	\$0.06	73	145	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$73.94	1%	3%	\$0.01	1	2	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.55	7%	60%	\$0.03	149	276	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$10,161.82	15%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.07	7%	15%	\$0.01	11	21	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.75	10%	25%	\$0.00	1	2	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	531	570	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	90	258	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$852.93	0%	5%	\$0.00	3	6	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$4,007.14	15%	24%	\$0.03	2	3	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$24,912.23	20%	50%	\$0.11	12	17	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	1,095	1,219	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,906.83	5	\$447.53	5%	40%	\$0.01	16	23	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,462.13	5	\$596.74	15%	50%	\$0.01	21	30	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.32	4%	25%	\$0.05	49	71	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	558.60	16	\$73.61	1%	3%	\$0.01	1	1	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,402.98	22%	60%	\$0.03	58	84	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$10,161.82	18%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.90	7%	15%	\$0.01	7	11	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.73	5	\$18.59	10%	25%	\$0.00	0	1	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	562	615	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	95	237	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	New	537.40	3	\$747.76	0%	5%	\$0.00	2	3	BEST Simulation
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$12,517.04	15%	52%	\$0.51	1	2	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$51.64	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	Existing	2,023.94	3	\$4,224.67	5%	39%	\$0.02	66	66	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,758.26	3	\$852.93	0%	5%	\$0.00	8	8	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	607.56	10	\$4,007.14	15%	24%	\$0.03	5	5	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$51.64	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	New	2,026.05	3	\$4,224.67	5%	39%	\$0.06	45	45	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	New	1,758.26	3	\$747.76	0%	5%	\$0.00	6	6	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	New	164.39	32	\$12,517.04	15%	52%	\$0.51	4	4	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	2,782.65	10	\$84.68	15%	75%	\$0.00	82	82	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	2,881.77	15	\$1,448.18	15%	50%	\$0.03	47	52	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	726.96	15	\$237.77	15%	38%	\$0.02	8	8	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	85.07	5	\$14.62	15%	50%	\$0.01	1	2	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,329.17	20	\$1,021.72	15%	50%	\$0.05	21	24	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	727.92	15	\$239.59	15%	38%	\$0.02	8	8	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,546.56	10	\$531.80	15%	50%	\$0.02	26	27	VT - TRM
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$774.53	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	Existing	1,219.16	15	\$563.53	8%	38%	\$0.03	17	19	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	Existing	696.44	3	\$60.14	8%	38%	\$0.01	10	10	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	1,997.22	15	\$901.59	8%	38%	\$0.03	28	30	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$206.54	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	192,699.65	10	\$16,723.13	8%	38%	\$0.01	2,812	2,840	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	Existing	65,034.53	15	\$4,877.59	8%	38%	\$0.01	957	958	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	Existing	33,229.22	3	\$1,387.38	8%	38%	\$0.00	471	490	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	99,160.61	10	\$12,486.64	8%	38%	\$0.01	1,399	1,461	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,834.95	8	\$2,855.47	10%	50%	\$0.11	169	185	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,301.92	8	\$1,012.38	5%	25%	\$0.06	60	66	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$324.77	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,088.22	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$4.13	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	33,422.71	17	\$2,575.57	5%	6%	\$0.01	81	82	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	5,126.64	10	\$1,210.00	15%	36%	\$0.02	253	270	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	Existing	31,745.94	17	\$16,414.64	25%	44%	\$0.04	1,409	1,482	RSMMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,458.26	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$704.97	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	26,089.84	10	\$3,301.93	8%	38%	\$0.01	381	384	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	Existing	26,354.39	15	\$4,025.73	8%	38%	\$0.01	388	388	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	Existing	13,775.33	3	\$1,145.06	8%	38%	\$0.01	199	203	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	42,700.98	12	\$11,182.46	8%	38%	\$0.02	614	629	6th Plan
Wastewater	Motors	Retrocommissioning	per Facility	Existing	12,563.11	3	\$4,224.67	5%	39%	\$0.02	988	1,049	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	Existing	11,580.09	3	\$852.93	0%	5%	\$0.00	143	143	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$409.03	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	Existing	3,813.81	10	\$4,007.14	15%	24%	\$0.03	84	88	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$348.39	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Commissioning	per Facility	New	1,295.83	3	\$4,224.67	5%	39%	\$0.06	16	16	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$84.68	15%	75%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$1,448.18	15%	50%	\$10.00	0	0	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$237.77	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$14.62	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,021.72	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$239.59	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$531.80	15%	50%	\$10.00	0	0	VT - TRM

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Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$774.53	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$563.53	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$60.14	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$901.59	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$206.54	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$16,723.13	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	New	0.00	15	\$4,877.59	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$1,387.38	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$12,486.64	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	185.26	8	\$2,855.47	10%	50%	\$1.17	3	3	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	131.45	8	\$1,012.38	5%	25%	\$0.59	1	1	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$324.77	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,088.22	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$4.13	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	3,242.08	17	\$2,575.57	5%	6%	\$0.06	1	1	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	505.38	10	\$1,210.00	15%	36%	\$0.18	4	4	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	New	3,205.58	17	\$9,848.78	25%	44%	\$0.24	22	22	RSMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,458.26	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$704.97	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$3,301.93	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$4,025.73	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$1,145.06	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$11,182.46	8%	38%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	New	1,125.43	3	\$747.76	0%	5%	\$0.00	2	2	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$409.03	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	New	103.33	32	\$12,517.04	15%	52%	\$0.51	1	1	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$348.39	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,539.14	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$105.25	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$495.62	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$591.20	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,745.32	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$378.80	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$18,271.77	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,028.73	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$18,570.10	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$31.06	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$18.01	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	Existing	0.00	10	\$106.16	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,638.26	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,570.20	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$43.95	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,685.79	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$19,308.86	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	Existing	685.03	5	\$185.39	15%	75%	\$0.02	20	20	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	6,832.01	10	\$3,707.99	15%	75%	\$0.04	201	201	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	Existing	1,979.79	5	\$1,870.85	15%	75%	\$0.07	56	58	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,150.27	15%	50%	\$10.00	0	0	Developed from RTF
Wastewater	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$2,760.71	15%	50%	\$10.00	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$153.34	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$2,300.62	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	Existing	3,324.64	3	\$4,224.67	5%	39%	\$0.02	54	56	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	Existing	2,975.55	3	\$852.93	0%	5%	\$0.00	7	7	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	Existing	1,028.20	10	\$4,007.14	15%	24%	\$0.03	5	5	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,539.14	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$105.25	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$495.62	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$591.20	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	New	606.24	3	\$4,224.67	5%	39%	\$0.06	185	73	Energy Management Program Design for PC
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,745.32	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$378.80	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$18,271.77	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,028.73	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$18,570.10	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$31.06	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$18.01	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	New	0.00	10	\$106.16	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,638.26	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,570.20	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$43.95	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,685.79	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$19,308.86	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	New	685.75	5	\$185.39	15%	75%	\$0.02	15	15	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	6,832.07	10	\$3,707.99	15%	75%	\$0.04	147	147	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	New	1,330.80	5	\$1,870.85	15%	75%	\$0.11	143	143	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	2,410.24	15	\$1,150.27	15%	50%	\$0.04	30	30	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Process	Refrigeration - System Controls	per Facility	New	4,634.75	18	\$2,760.71	15%	50%	\$0.04	58	58	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Maintenance	per Facility	New	1,620.84	3	\$153.34	15%	50%	\$0.01	20	20	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	4,758.00	15	\$2,300.62	15%	50%	\$0.04	60	60	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	New	2,001.72	3	\$747.76	0%	5%	\$0.00	18	18	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	New	179.86	32	\$12,517.04	15%	52%	\$0.51	12	12	6th Plan
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$33,552.09	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	Existing	381.38	3	\$852.93	0%	5%	\$0.00	1	1	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	Existing	131.61	10	\$4,007.14	15%	24%	\$0.03	1	1	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	139.70	15	\$30.15	15%	35%	\$0.01	1	1	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,232.33	20	\$5,083.75	100%	at stock turnover	\$0.09	24	24	BEST Simulation
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$22,934.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	New	141.80	3	\$747.76	0%	5%	\$0.00	0	0	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	New	13.37	32	\$12,517.04	15%	52%	\$0.51	0	0	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	51.96	15	\$14.46	15%	35%	\$0.02	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,496.40	20	\$3,200.81	100%	at stock turnover	\$0.10	10	10	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	43,492.22	23	\$71,340.80	2%	at stock turnover	\$0.09	54	52	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	23,897.93	23	\$9,711.62	6%	at stock turnover	\$0.03	65	66	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,171.37	10	\$2,827.58	15%	45%	\$0.02	13	15	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,978.57	15	\$1,261.69	15%	60%	\$0.05	4	4	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	575.49	15	\$500.14	15%	75%	\$0.06	1	2	BEST Simulation
Water	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	20,785.07	15	\$202,839.00	15%	50%	\$0.64	82	94	BEST Simulation
Water	Cooling	Destratification Fans (HVLS)	per Facility	Existing	18,366.90	12	\$33,551.96	15%	50%	\$0.13	73	88	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	Existing	5,436.92	15	\$31,202.35	20%	50%	\$0.12	19	21	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	41,977.81	23	\$64,259.26	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	Existing	17,468.80	18	\$20,310.97	15%	75%	\$0.07	18	22	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,109.90	18	\$1,615.39	15%	25%	\$0.05	1	2	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	Existing	7,363.59	10	\$13,330.97	18%	30%	\$0.04	16	6	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	13,408.02	45	\$122,316.20	15%	25%	\$0.14	15	17	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,203.30	20	\$3,093.37	15%	25%	\$0.06	4	4	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,033.78	45	\$15,428.71	45%	50%	\$0.06	1	1	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	Existing	34,076.42	23	\$73,197.25	5%	at stock turnover	\$0.17	17	18	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	Existing	4,954.68	3	\$863.64	0%	5%	\$0.00	3	3	BEST Simulation
Water	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$538.29	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	Existing	1,687.95	10	\$4,058.58	15%	24%	\$0.02	2	2	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	34,881.42	23	\$14,694.10	3%	at stock turnover	\$0.03	49	48	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,871.42	10	\$2,842.53	15%	45%	\$0.02	6	7	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,109.28	4	\$1,710.26	15%	50%	\$0.01	9	12	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,361.19	15	\$1,560.99	15%	60%	\$0.04	2	3	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	503.46	15	\$454.76	15%	75%	\$0.06	1	1	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	33,224.68	23	\$54,181.96	2%	at stock turnover	\$0.09	58	56	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	15,715.76	23	\$924.19	6%	at stock turnover	\$0.00	65	65	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	9,215.88	10	\$2,856.45	15%	45%	\$0.02	9	9	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,183.77	15	\$847.40	15%	60%	\$0.05	2	2	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$7,155.05	15%	75%	\$10.00	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	9,781.74	15	\$202,839.00	15%	50%	\$1.28	31	32	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Cooling	Destratification Fans (HVLS)	per Facility	New	10,243.76	12	\$22,934.37	15%	50%	\$0.14	32	33	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	New	3,040.82	15	\$24,912.23	20%	50%	\$0.11	8	8	BEST Simulation
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	32,043.96	23	\$48,803.67	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	New	11,385.68	18	\$15,255.46	15%	75%	\$0.08	9	10	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	872.81	18	\$800.48	15%	25%	\$0.06	1	1	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	New	3,968.62	10	\$8,287.32	18%	30%	\$0.05	9	5	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	New	1,044.09	45	\$84,164.52	15%	25%	\$0.13	1	1	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	New	1,681.68	20	\$1,182.54	15%	25%	\$0.09	2	2	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	1.24	45	\$1,869.07	45%	50%	\$0.05	0	0	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	New	20,269.10	23	\$43,329.67	5%	at stock turnover	\$0.17	16	16	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	New	2,761.05	3	\$758.45	0%	5%	\$0.00	1	1	BEST Simulation
Water	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,443.69	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	New	238.05	32	\$12,695.23	15%	52%	\$0.55	1	1	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	22,717.76	23	\$11,140.13	3%	at stock turnover	\$0.04	48	47	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,304.57	10	\$1,848.96	15%	45%	\$0.02	2	3	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,036.98	4	\$1,112.93	15%	50%	\$0.01	4	4	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	944.75	15	\$754.85	15%	60%	\$0.05	1	1	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$14,142.01	15%	75%	\$10.00	0	0	BEST Simulation
Water	Exterior Lighting	Energy Management System	per Facility	Existing	107.22	15	\$31,202.35	20%	50%	\$0.12	5	8	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	353.33	5	\$66.00	15%	25%	\$0.01	6	11	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	138.75	10	\$154.68	33%	60%	\$0.06	6	12	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,866.59	10	\$1,056.73	15%	30%	\$0.03	44	87	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.02	15	\$36.33	100%	at stock turnover	\$0.01	228	235	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	17.21	15	\$6.80	100%	at stock turnover	\$0.01	116	118	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.64	15	\$12.93	100%	at stock turnover	\$0.03	148	386	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.25	3	\$863.64	0%	5%	\$0.00	1	2	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	35.02	10	\$4,058.58	15%	24%	\$0.02	1	1	6th Plan
Water	Exterior Lighting	Energy Management System	per Facility	New	93.31	15	\$24,912.23	20%	50%	\$0.11	3	5	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	306.31	5	\$65.74	15%	25%	\$0.01	4	5	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	125.56	10	\$94.87	44%	60%	\$0.03	2	4	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,618.96	10	\$1,051.83	15%	30%	\$0.03	29	42	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.02	15	\$36.33	100%	at stock turnover	\$0.01	241	268	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	17.21	15	\$6.80	100%	at stock turnover	\$0.03	123	134	AEO 2013
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.64	15	\$12.93	100%	at stock turnover	\$0.02	156	356	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	New	88.60	3	\$758.45	0%	5%	\$0.00	1	1	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.58	32	\$12,695.23	15%	52%	\$0.55	0	0	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	3,939.11	23	\$50,791.47	2%	at stock turnover	\$0.09	5	5	BEST Simulation
Water	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$33,551.96	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	Existing	13,177.85	15	\$31,202.35	20%	50%	\$0.12	50	51	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,112.16	23	\$39,089.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	Existing	2,297.87	18	\$20,310.97	15%	75%	\$0.07	3	3	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,345.36	18	\$1,615.39	15%	25%	\$0.05	2	2	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	Existing	53,185.17	45	\$122,316.20	15%	25%	\$0.14	68	69	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	Existing	630.78	20	\$3,093.37	15%	25%	\$0.06	1	1	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	19,996.78	45	\$15,428.71	45%	50%	\$0.06	13	13	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	Existing	11,581.20	3	\$863.64	0%	5%	\$0.00	7	7	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$538.29	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	Existing	4,001.86	10	\$4,058.58	15%	24%	\$0.02	5	5	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	6,071.95	23	\$44,790.11	2%	at stock turnover	\$0.09	11	10	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$22,934.37	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	New	12,480.60	15	\$24,912.23	20%	50%	\$0.11	35	35	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,401.42	23	\$29,687.94	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	New	1,432.32	18	\$15,255.46	15%	75%	\$0.08	1	1	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-16.10	18	\$800.48	15%	25%	\$0.06	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	New	50,546.54	45	\$84,164.52	15%	25%	\$0.13	48	48	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	New	-1,024.68	20	\$1,182.54	15%	25%	\$0.09	-1	-1	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	New	2,890.26	45	\$1,869.07	45%	50%	\$0.05	1	1	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	New	10,970.95	3	\$758.45	0%	5%	\$0.00	5	5	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,443.69	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	New	1,013.94	32	\$12,695.23	15%	52%	\$0.55	4	4	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	Existing	579.90	15	\$31,202.35	20%	50%	\$0.12	27	43	BEST Simulation
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	523.67	15	\$67.70	100%	at stock turnover	\$0.01	1,746	1,801	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,248.17	5	\$448.06	5%	40%	\$0.01	43	81	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,128.76	5	\$597.33	15%	50%	\$0.01	55	112	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,618.76	12	\$4,016.05	3%	25%	\$0.06	122	245	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	621.82	16	\$73.99	1%	3%	\$0.01	2	4	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,006.96	10	\$2,337.50	7%	60%	\$0.03	251	466	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$31,709.71	15%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,380.91	8	\$347.00	7%	15%	\$0.01	19	35	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	239.58	5	\$18.82	10%	25%	\$0.00	1	4	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	24.57	15	\$9.70	100%	at stock turnover	\$0.02	895	961	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	33.73	15	\$20.17	100%	at stock turnover	\$0.03	152	434	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	Existing	599.83	3	\$863.64	0%	5%	\$0.00	5	10	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	200.46	10	\$4,058.58	15%	24%	\$0.02	3	5	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	New	539.69	15	\$24,912.23	20%	50%	\$0.11	19	28	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	523.67	15	\$67.70	100%	at stock turnover	\$0.01	1,847	2,057	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,826.52	5	\$447.55	5%	40%	\$0.01	28	37	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,542.44	5	\$596.81	15%	50%	\$0.01	36	52	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,361.59	12	\$3,775.26	4%	25%	\$0.05	83	120	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	558.60	16	\$73.73	1%	3%	\$0.01	1	2	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,605.30	10	\$2,402.98	22%	60%	\$0.03	99	142	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$31,709.71	18%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,238.54	8	\$337.98	7%	15%	\$0.01	12	18	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	170.73	5	\$18.56	10%	25%	\$0.00	1	1	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	24.57	15	\$9.70	100%	at stock turnover	\$0.03	949	1,038	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	33.73	15	\$20.17	100%	at stock turnover	\$0.02	160	401	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	New	537.40	3	\$758.45	0%	5%	\$0.00	3	5	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	New	43.86	32	\$12,695.23	15%	52%	\$0.55	2	3	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$161.13	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	Existing	2,023.94	3	\$4,325.41	5%	39%	\$0.02	111	111	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,758.26	3	\$863.64	0%	5%	\$0.00	14	14	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	607.56	10	\$4,058.58	15%	24%	\$0.02	9	9	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$161.13	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	New	2,026.05	3	\$4,325.41	5%	39%	\$0.08	75	75	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	New	1,758.26	3	\$758.45	0%	5%	\$0.00	10	10	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	New	164.39	32	\$12,695.23	15%	52%	\$0.55	7	7	6th Plan
Water	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	2,782.65	10	\$84.82	15%	75%	\$0.00	138	138	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	2,852.12	15	\$1,448.33	15%	50%	\$0.03	78	87	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	726.96	15	\$237.69	15%	38%	\$0.02	13	14	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	85.07	5	\$14.69	15%	50%	\$0.01	2	3	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,329.17	20	\$1,021.67	15%	50%	\$0.05	36	41	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	727.92	15	\$239.50	15%	38%	\$0.02	13	14	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,530.45	10	\$531.85	15%	50%	\$0.02	43	46	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,416.90	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	Existing	1,205.84	15	\$563.56	8%	38%	\$0.03	28	31	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Maintenance	per Facility	Existing	694.54	3	\$60.07	8%	38%	\$0.01	17	18	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	1,975.28	15	\$901.54	8%	38%	\$0.03	47	51	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$644.51	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$782.43	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	Existing	0.00	15	\$228.16	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	Existing	0.00	3	\$64.97	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	0.00	10	\$584.18	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,318.59	8	\$2,941.53	10%	50%	\$0.09	290	314	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,645.07	8	\$1,042.81	5%	25%	\$0.05	103	111	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$1,013.42	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$26.04	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	42,050.47	17	\$2,653.30	5%	6%	\$0.00	139	139	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	6,585.97	10	\$1,246.48	15%	36%	\$0.01	450	463	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	Existing	40,191.30	17	\$16,909.27	25%	44%	\$0.03	2,436	2,531	RSMMeans 2013
Water	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$34.80	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$16.76	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	94,250.11	10	\$11,928.26	8%	38%	\$0.01	2,320	2,343	6th Plan
Water	Motors	Pumping System - Controls	per Facility	Existing	95,205.80	15	\$14,542.90	8%	38%	\$0.01	2,366	2,367	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	Existing	49,626.56	3	\$4,136.70	8%	38%	\$0.01	1,209	1,234	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	154,258.24	12	\$40,396.88	8%	38%	\$0.02	3,741	3,835	6th Plan
Water	Motors	Retrocommissioning	per Facility	Existing	15,874.80	3	\$4,325.41	5%	39%	\$0.02	1,703	1,789	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	Existing	14,569.36	3	\$863.64	0%	5%	\$0.00	241	242	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$9.80	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	Existing	4,771.21	10	\$4,058.58	15%	24%	\$0.02	141	148	6th Plan
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$232.02	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Commissioning	per Facility	New	30.88	3	\$4,325.41	5%	39%	\$0.08	1	1	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$84.82	15%	75%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$1,448.33	15%	50%	\$10.00	0	0	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$237.69	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$14.69	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,021.67	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$239.50	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$531.85	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,416.90	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$563.56	8%	38%	\$10.00	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$60.07	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$901.54	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$644.51	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$782.43	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	New	0.00	15	\$228.16	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$64.97	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$584.18	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	4.41	8	\$2,941.53	10%	50%	\$50.67	0	0	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	3.13	8	\$1,042.81	5%	25%	\$25.33	0	0	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$1,013.42	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$26.04	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	76.31	17	\$2,653.30	5%	6%	\$2.69	0	0	E3T Website
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	12.02	10	\$1,246.48	15%	36%	\$7.90	0	0	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	New	76.25	17	\$10,145.56	25%	44%	\$10.29	1	1	RSMears 2013
Water	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$34.80	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$16.76	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$11,928.26	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$14,542.90	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$4,136.70	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$40,396.88	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	New	26.80	3	\$758.45	0%	5%	\$0.00	0	0	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$9.80	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	New	2.51	32	\$12,695.23	15%	52%	\$0.55	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$232.02	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$5,560.03	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$105.18	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$495.75	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$591.14	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$14,807.66	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$378.71	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$18,271.75	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,028.65	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$18,570.03	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$30.94	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$56.20	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	Existing	0.00	10	\$331.28	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$11,353.11	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,570.29	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$44.08	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,685.77	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$19,308.89	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	Existing	685.03	5	\$185.36	15%	75%	\$0.02	34	34	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	6,780.24	10	\$3,707.97	15%	75%	\$0.04	334	337	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	Existing	1,979.79	5	\$1,870.87	15%	75%	\$0.07	95	98	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,150.31	15%	50%	\$10.00	0	0	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$2,760.81	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$153.39	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$2,300.63	15%	50%	\$10.00	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Retrocommissioning	per Facility	Existing	3,416.00	3	\$4,325.41	5%	39%	\$0.02	96	96	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	Existing	2,975.55	3	\$863.64	0%	5%	\$0.00	12	12	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	Existing	1,028.20	10	\$4,058.58	15%	24%	\$0.02	8	8	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$5,560.03	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$105.18	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$495.75	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$591.14	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	New	811.52	3	\$4,325.41	5%	39%	\$0.08	270	116	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$14,807.66	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$378.71	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$18,271.75	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,028.65	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$18,570.03	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$30.94	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$56.20	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	New	0.00	10	\$331.28	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	New	0.00	10	\$11,353.11	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,570.29	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$44.08	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,685.77	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$19,308.89	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	New	685.75	5	\$185.36	15%	75%	\$0.02	25	25	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	6,832.07	10	\$3,707.97	15%	75%	\$0.04	248	248	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	New	1,383.42	5	\$1,870.87	15%	75%	\$0.10	198	201	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	2,410.24	15	\$1,150.31	15%	50%	\$0.04	51	51	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	New	4,634.75	18	\$2,760.81	15%	50%	\$0.04	98	98	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	New	1,620.84	3	\$153.39	15%	50%	\$0.01	34	34	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	4,758.00	15	\$2,300.63	15%	50%	\$0.04	101	101	AEG study for State of New Mexico
Water	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	New	2,062.58	3	\$758.45	0%	5%	\$0.00	25	25	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	New	184.18	32	\$12,695.23	15%	52%	\$0.55	17	17	6th Plan
Water	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$33,551.96	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	Existing	381.38	3	\$863.64	0%	5%	\$0.00	1	2	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	Existing	131.61	10	\$4,058.58	15%	24%	\$0.02	1	1	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	139.70	15	\$30.16	15%	35%	\$0.01	2	2	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,232.33	20	\$5,083.75	100%	at stock turnover	\$0.09	40	40	BEST Simulation
Water	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$22,934.37	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	New	141.80	3	\$758.45	0%	5%	\$0.00	0	0	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	New	13.37	32	\$12,695.23	15%	52%	\$0.55	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	51.96	15	\$14.44	15%	35%	\$0.02	1	1	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,496.40	20	\$3,200.81	100%	at stock turnover	\$0.10	17	17	BEST Simulation

Washington Industrial Measure Assumptions

Table H-14 Table of Washington Industrial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	29,682.67	23	\$61,838.11	2%	at stock turnover	\$0.16	25	24	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	16,270.45	23	\$9,350.10	6%	at stock turnover	\$0.06	32	33	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	5,196.76	10	\$1,447.73	15%	45%	\$0.04	5	6	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,499.73	15	\$969.08	15%	60%	\$0.07	2	2	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	392.18	15	\$340.26	15%	75%	\$0.09	1	1	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	14,422.50	15	\$243,600.55	15%	50%	\$1.70	41	47	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	Existing	12,744.74	12	\$23,405.53	15%	50%	\$0.22	37	44	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	Existing	3,772.68	15	\$35,336.63	20%	50%	\$0.17	9	10	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	28,640.57	23	\$55,700.37	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	Existing	12,088.49	18	\$15,316.37	15%	75%	\$0.10	9	11	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	736.56	18	\$2,044.35	15%	25%	\$0.07	1	1	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	Existing	5,133.70	10	\$7,820.42	18%	30%	\$0.07	8	3	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	9,951.75	45	\$151,363.32	15%	25%	\$0.16	8	9	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,245.11	20	\$2,661.71	15%	25%	\$0.08	2	2	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	89.84	45	\$19,887.44	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	Existing	23,244.59	23	\$63,447.28	4%	at stock turnover	\$0.28	8	8	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	Existing	3,439.89	3	\$754.21	0%	5%	\$0.01	1	2	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$517.05	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	Existing	1,172.36	10	\$3,529.55	15%	24%	\$0.05	1	1	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	26,574.83	23	\$14,147.11	3%	at stock turnover	\$0.06	27	27	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,468.53	10	\$2,161.69	15%	45%	\$0.04	3	4	DEER
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,515.05	4	\$1,376.52	15%	50%	\$0.03	6	7	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,097.51	15	\$1,394.48	15%	60%	\$0.07	1	2	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	380.19	15	\$345.52	15%	75%	\$0.09	0	0	BEST Simulation
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	21,347.67	23	\$43,361.68	2%	at stock turnover	\$0.17	10	10	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	10,101.44	23	\$1,547.06	6%	at stock turnover	\$0.02	11	11	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,649.70	10	\$1,757.65	15%	45%	\$0.04	2	2	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	932.84	15	\$675.57	15%	60%	\$0.07	0	1	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$7,345.79	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	6,060.38	15	\$243,600.55	15%	50%	\$3.65	7	7	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	New	6,614.52	12	\$15,204.91	15%	50%	\$0.25	7	8	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	New	1,969.08	15	\$26,916.50	20%	50%	\$0.15	2	2	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	20,606.62	23	\$39,057.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	New	7,275.46	18	\$10,313.39	15%	75%	\$0.11	2	2	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	722.88	18	\$1,659.82	15%	25%	\$0.06	0	0	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	New	2,598.23	10	\$4,679.43	18%	30%	\$0.08	2	1	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	New	-45.92	45	\$62,126.81	15%	25%	\$0.10	0	0	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	New	1,885.76	20	\$2,790.51	15%	25%	\$0.08	1	1	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-41.61	45	\$2,897.94	45%	50%	\$0.05	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	New	13,047.14	23	\$34,675.94	4%	at stock turnover	\$0.28	3	3	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	New	1,818.21	3	\$620.77	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,387.05	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	New	151.94	32	\$10,393.27	15%	52%	\$0.34	0	0	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	16,993.39	23	\$10,157.05	3%	at stock turnover	\$0.06	10	10	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,887.16	10	\$1,378.69	15%	45%	\$0.04	1	1	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,564.46	4	\$885.48	15%	50%	\$0.04	1	1	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	785.88	15	\$643.37	15%	60%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$13,904.24	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Exterior Lighting	Energy Management System	per Facility	Existing	120.21	15	\$35,336.63	20%	50%	\$0.17	4	7	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	392.03	5	\$67.19	15%	25%	\$0.03	4	9	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	13.28	10	\$13.62	33%	60%	\$0.09	0	1	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,071.22	10	\$1,076.51	15%	30%	\$0.05	35	71	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	281.18	15	\$58.15	100%	at stock turnover	\$0.00	170	184	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	22.37	15	\$14.89	100%	at stock turnover	\$0.02	109	119	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	19.54	15	\$9.01	100%	at stock turnover	\$0.03	111	220	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	Existing	113.45	3	\$754.21	0%	5%	\$0.01	1	2	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	38.86	10	\$3,529.55	15%	24%	\$0.05	0	1	6th Plan
Agriculture	Exterior Lighting	Energy Management System	per Facility	New	93.61	15	\$26,916.50	20%	50%	\$0.15	1	2	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	313.99	5	\$66.88	15%	25%	\$0.03	1	2	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	10.80	10	\$8.36	44%	60%	\$0.06	0	0	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,654.86	10	\$1,071.87	15%	30%	\$0.06	11	16	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	281.18	15	\$58.15	100%	at stock turnover	\$0.00	66	73	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	22.37	15	\$14.89	100%	at stock turnover	\$0.02	43	47	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	19.54	15	\$9.01	100%	at stock turnover	\$0.03	43	82	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	New	90.86	3	\$620.77	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	New	7.59	32	\$10,393.27	15%	52%	\$0.34	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,357.70	23	\$54,484.12	2%	at stock turnover	\$0.16	5	5	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$23,405.53	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	Existing	18,282.65	15	\$35,336.63	20%	50%	\$0.17	64	65	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,975.00	23	\$42,109.70	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	Existing	3,112.79	18	\$15,316.37	15%	75%	\$0.10	3	3	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,601.49	18	\$2,044.35	15%	25%	\$0.07	3	3	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	Existing	73,788.03	45	\$151,363.32	15%	25%	\$0.16	87	87	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,170.89	20	\$2,661.71	15%	25%	\$0.08	1	1	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	27,744.63	45	\$19,887.44	45%	50%	\$0.06	16	16	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	Existing	16,068.39	3	\$754.21	0%	5%	\$0.01	9	10	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$517.05	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	Existing	5,552.41	10	\$3,529.55	15%	24%	\$0.05	6	6	6th Plan
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,190.90	23	\$44,360.36	2%	at stock turnover	\$0.17	3	3	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$15,204.91	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	New	17,170.62	15	\$26,916.50	20%	50%	\$0.15	22	22	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,354.99	23	\$29,527.98	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	New	1,396.83	18	\$10,313.39	15%	75%	\$0.11	0	0	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	2,077.48	18	\$1,659.82	15%	25%	\$0.06	1	1	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	New	52,596.60	45	\$62,126.81	15%	25%	\$0.10	22	22	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	New	1,494.52	20	\$2,790.51	15%	25%	\$0.08	1	1	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,987.46	45	\$2,897.94	45%	50%	\$0.05	1	1	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	New	15,116.38	3	\$620.77	0%	5%	\$0.01	3	3	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,387.05	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	New	1,390.95	32	\$10,393.27	15%	52%	\$0.34	2	2	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	Existing	713.82	15	\$35,336.63	20%	50%	\$0.17	23	39	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	564.17	15	\$116.68	100%	at stock turnover	\$0.01	1,411	1,590	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,788.70	5	\$569.99	5%	40%	\$0.03	38	73	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,882.57	5	\$760.09	15%	50%	\$0.03	53	100	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,454.14	12	\$4,711.94	3%	25%	\$0.09	108	220	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	765.98	16	\$86.69	1%	3%	\$0.01	2	4	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,931.01	10	\$2,509.07	7%	60%	\$0.05	221	419	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$38,081.94	15%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,700.17	8	\$407.14	7%	15%	\$0.03	17	31	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	325.27	5	\$32.20	10%	25%	\$0.01	2	4	AEG research & analysis
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	31.94	15	\$21.26	100%	at stock turnover	\$0.02	843	922	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	53.48	15	\$24.66	100%	at stock turnover	\$0.03	219	436	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	Existing	738.88	3	\$754.21	0%	5%	\$0.01	4	9	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	246.68	10	\$3,529.55	15%	24%	\$0.05	3	4	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	New	587.59	15	\$26,916.50	20%	50%	\$0.15	8	11	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	564.17	15	\$116.68	100%	at stock turnover	\$0.00	545	607	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,330.12	5	\$569.68	5%	40%	\$0.04	13	17	Illinois TRM
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,977.97	5	\$759.47	15%	50%	\$0.04	16	22	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,703.24	12	\$4,430.20	4%	25%	\$0.09	34	48	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	636.45	16	\$86.38	1%	3%	\$0.01	1	1	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,062.80	10	\$2,395.76	22%	60%	\$0.05	41	58	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$38,081.94	18%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,412.30	8	\$396.61	7%	15%	\$0.03	5	7	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	263.79	5	\$32.20	10%	25%	\$0.01	1	1	AEG research & analysis
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	31.94	15	\$21.26	100%	at stock turnover	\$0.02	329	361	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	53.48	15	\$24.66	100%	at stock turnover	\$0.03	85	162	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	New	613.92	3	\$620.77	0%	5%	\$0.01	1	2	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	New	47.62	32	\$10,393.27	15%	52%	\$0.34	1	1	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	7,327.57	5	\$154.80	15%	33%	\$0.01	156	156	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	Existing	2,835.78	3	\$3,300.43	5%	39%	\$0.09	113	114	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,463.52	3	\$754.21	0%	5%	\$0.01	14	15	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	851.27	10	\$3,529.55	15%	24%	\$0.05	9	9	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	7,327.57	5	\$154.80	15%	33%	\$0.01	51	51	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	New	2,813.77	3	\$3,300.43	5%	39%	\$0.09	37	37	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	New	2,442.87	3	\$620.77	0%	5%	\$0.01	5	5	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	New	227.57	32	\$10,393.27	15%	52%	\$0.34	3	3	6th Plan
Agriculture	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	11,451.81	10	\$348.62	15%	75%	\$0.00	418	418	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	12,458.47	15	\$5,063.97	15%	50%	\$0.04	256	274	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,991.75	15	\$978.67	15%	38%	\$0.04	40	42	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	350.11	5	\$60.06	15%	50%	\$0.04	7	8	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	5,470.11	20	\$4,204.80	15%	50%	\$0.07	109	124	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,995.70	15	\$985.80	15%	38%	\$0.04	40	42	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	6,037.49	10	\$2,188.32	15%	50%	\$0.05	122	134	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,322.07	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	Existing	4,761.38	15	\$2,318.97	8%	38%	\$0.05	82	92	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,866.17	3	\$247.38	8%	38%	\$0.03	51	53	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	7,798.29	15	\$3,710.36	8%	38%	\$0.05	135	150	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$619.22	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	36,708.40	10	\$3,185.57	8%	38%	\$0.01	664	671	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	Existing	12,381.87	15	\$929.14	8%	38%	\$0.01	226	226	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	Existing	6,330.02	3	\$264.41	8%	38%	\$0.01	111	116	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	18,889.64	10	\$2,378.73	8%	38%	\$0.02	330	345	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	890.88	8	\$1,240.29	10%	50%	\$0.22	82	89	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	632.09	8	\$439.65	5%	25%	\$0.11	29	31	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	Existing	45,807.26	10	\$973.72	15%	35%	\$0.00	558	558	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,406.59	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$9.29	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	16,214.46	17	\$1,118.62	5%	6%	\$0.01	39	39	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,525.30	10	\$525.41	15%	36%	\$0.03	125	132	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	Existing	15,666.47	17	\$6,057.20	25%	44%	\$0.04	699	725	RSMMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,225.20	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,559.19	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	6,484.59	10	\$858.86	8%	38%	\$0.02	112	118	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	Existing	6,549.40	15	\$1,047.10	8%	38%	\$0.02	115	120	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	Existing	3,424.32	3	\$297.84	8%	38%	\$0.03	59	63	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	10,615.84	12	\$2,908.78	8%	38%	\$0.03	181	194	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	Existing	6,099.50	3	\$3,300.43	5%	39%	\$0.09	480	505	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	Existing	5,599.94	3	\$754.21	0%	5%	\$0.01	67	69	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$904.68	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	Existing	1,849.72	10	\$3,529.55	15%	24%	\$0.05	40	42	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$817.06	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Commissioning	per Facility	New	5,231.51	3	\$3,300.43	5%	39%	\$0.09	191	191	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	New	11,451.81	10	\$348.62	15%	75%	\$0.00	148	148	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	12,099.51	15	\$5,063.97	15%	50%	\$0.04	91	91	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,884.43	15	\$978.67	15%	38%	\$0.04	14	14	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	336.57	5	\$60.06	15%	50%	\$0.04	3	3	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	New	5,186.58	20	\$4,204.80	15%	50%	\$0.07	39	39	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,884.05	15	\$985.80	15%	38%	\$0.04	14	14	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	5,807.96	10	\$2,188.32	15%	50%	\$0.05	43	43	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,322.07	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	New	4,530.90	15	\$2,318.97	8%	38%	\$0.05	29	29	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	New	2,770.17	3	\$247.38	8%	38%	\$0.03	18	18	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	7,463.87	15	\$3,710.36	8%	38%	\$0.05	48	48	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$619.22	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	36,390.56	10	\$3,185.57	8%	38%	\$0.01	235	235	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	New	12,367.11	15	\$929.14	8%	38%	\$0.01	80	80	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	New	6,117.20	3	\$264.41	8%	38%	\$0.01	39	39	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	New	18,174.50	10	\$2,378.73	8%	38%	\$0.02	117	117	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	759.16	8	\$1,240.29	10%	50%	\$0.25	33	33	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	538.75	8	\$439.65	5%	25%	\$0.13	12	12	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	New	45,807.26	10	\$973.72	15%	35%	\$0.00	198	198	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,406.59	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$9.29	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	14,199.38	17	\$1,118.62	5%	6%	\$0.01	15	15	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,151.16	10	\$525.41	15%	36%	\$0.03	49	49	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	New	13,743.26	17	\$3,634.50	25%	44%	\$0.03	281	281	RSMMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,225.20	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,559.19	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	6,185.00	10	\$858.86	8%	38%	\$0.02	40	40	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	New	6,298.91	15	\$1,047.10	8%	38%	\$0.02	41	41	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	New	3,177.38	3	\$297.84	8%	38%	\$0.03	20	20	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	New	9,800.79	12	\$2,908.78	8%	38%	\$0.03	63	63	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	New	4,957.08	3	\$620.77	0%	5%	\$0.01	27	27	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$904.68	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	New	421.78	32	\$10,393.27	15%	52%	\$0.34	17	17	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$817.06	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$400.32	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$7.12	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$34.06	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$40.87	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	3,127.25	10	\$14,226.54	15%	15%	\$0.61	1	1	VT - TRM
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$26.01	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,260.11	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$139.94	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,280.54	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	389.70	15	\$66.57	15%	16%	\$0.02	0	0	MT - IRP 2013
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	6,941.91	15	\$54.18	15%	16%	\$0.00	6	6	OPA - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Heat Lamps	per Facility	Existing	12,885.69	10	\$318.28	15%	16%	\$0.00	11	11	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	Existing	11,765.02	10	\$10,907.53	15%	16%	\$0.14	10	10	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$4,372.30	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$74.93	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,609.42	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$32,847.37	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	Existing	108.42	5	\$29.41	15%	75%	\$0.07	4	4	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,081.28	10	\$586.71	15%	75%	\$0.08	39	40	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	Existing	2,252.46	5	\$3,182.47	15%	75%	\$0.33	402	412	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	8,669.65	15	\$4,144.43	15%	50%	\$0.06	184	185	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	Existing	16,628.49	18	\$9,946.51	15%	50%	\$0.06	349	360	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	Existing	5,837.22	3	\$552.65	15%	50%	\$0.04	124	124	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	17,099.81	15	\$8,288.86	15%	50%	\$0.06	362	367	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	Existing	1,322.14	3	\$3,300.43	5%	39%	\$0.09	677	137	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	Existing	3,404.17	3	\$754.21	0%	5%	\$0.01	52	52	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	Existing	1,172.26	10	\$3,529.55	15%	24%	\$0.05	33	33	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$400.32	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$7.12	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$34.06	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$40.87	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	New	2,018.60	3	\$3,300.43	5%	39%	\$0.09	236	108	Energy Management Program Design for PC
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	3,010.00	10	\$14,226.54	15%	15%	\$0.61	0	0	VT - TRM
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$26.01	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,260.11	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$139.94	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,280.54	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	New	389.24	15	\$66.57	15%	16%	\$0.02	0	0	MT - IRP 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	New	6,941.91	15	\$54.18	15%	16%	\$0.00	2	2	OPA - TRM
Agriculture	Process	Heat Lamps	per Facility	New	12,880.47	10	\$318.28	15%	16%	\$0.00	4	4	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	New	11,685.74	10	\$10,907.53	15%	16%	\$0.14	4	4	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$4,372.30	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$74.93	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,609.42	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$32,847.37	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$29.41	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$586.71	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	New	2,689.81	5	\$3,182.47	15%	75%	\$0.27	139	139	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	8,656.85	15	\$4,144.43	15%	50%	\$0.06	65	65	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	New	16,443.97	18	\$9,946.51	15%	50%	\$0.06	124	124	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	New	5,837.22	3	\$552.65	15%	50%	\$0.04	44	44	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	17,020.30	15	\$8,288.86	15%	50%	\$0.06	128	128	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	New	4,136.39	3	\$620.77	0%	5%	\$0.01	18	18	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	New	362.28	32	\$10,393.27	15%	52%	\$0.34	12	12	6th Plan
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$23,405.53	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	Existing	460.74	3	\$754.21	0%	5%	\$0.01	1	2	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	Existing	159.00	10	\$3,529.55	15%	24%	\$0.05	1	1	6th Plan
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	168.76	15	\$36.53	15%	35%	\$0.02	2	2	6th Plan
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,852.56	20	\$6,499.25	100%	at stock turnover	\$0.11	40	40	BEST Simulation
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$15,204.91	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	New	147.81	3	\$620.77	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	New	13.92	32	\$10,393.27	15%	52%	\$0.34	0	0	6th Plan
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	54.14	15	\$15.17	15%	35%	\$0.03	0	0	6th Plan

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Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,129.04	20	\$3,902.77	100%	at stock turnover	\$0.13	5	5	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	12,567.82	23	\$26,182.62	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	6,889.00	23	\$3,958.89	6%	at stock turnover	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	2,200.34	10	\$611.70	15%	45%	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	635.00	15	\$409.87	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	166.05	15	\$142.83	15%	75%	\$0.09	0	0	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	6,106.57	15	\$2,443,070.33	15%	50%	\$40.28	0	0	BEST Simulation
Chemical Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	5,396.20	12	\$9,911.39	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	Existing	1,597.38	15	\$14,792.56	20%	50%	\$0.18	0	0	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	12,126.59	23	\$23,583.86	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	5,118.34	18	\$6,486.49	15%	75%	\$0.10	0	0	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	311.86	18	\$866.31	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	Existing	2,173.64	10	\$3,310.01	18%	30%	\$0.07	0	0	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	4,213.63	45	\$64,088.68	15%	25%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	950.59	20	\$1,127.14	15%	25%	\$0.08	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	38.04	45	\$8,420.95	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	9,841.89	23	\$26,863.95	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	Existing	1,456.47	3	\$369.50	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,037.09	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	496.38	10	\$1,745.05	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	11,251.94	23	\$5,989.97	3%	at stock turnover	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	3,162.22	10	\$916.00	15%	45%	\$0.04	0	0	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	4,452.13	4	\$583.75	15%	50%	\$0.03	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

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Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	888.10	15	\$589.96	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	160.97	15	\$145.94	15%	75%	\$0.09	0	0	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	9,038.73	23	\$18,359.59	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	493.48	23	\$964,460.77	6%	at stock turnover	\$203.44	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,710.01	10	\$745.22	15%	45%	\$0.04	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	447.39	15	\$285.67	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$14,733.56	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	2,692.81	15	\$2,443,070.33	15%	50%	\$86.51	0	0	BEST Simulation
Chemical Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	2,939.32	12	\$6,436.81	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	New	875.03	15	\$11,227.94	20%	50%	\$0.15	0	0	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	8,724.96	23	\$16,537.31	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	3,080.47	18	\$4,365.73	15%	75%	\$0.11	0	0	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	321.17	18	\$701.75	15%	25%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	New	1,166.64	10	\$1,981.04	18%	30%	\$0.08	0	0	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-20.39	45	\$26,306.17	15%	25%	\$0.10	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	837.48	20	\$1,183.03	15%	25%	\$0.08	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-18.48	45	\$1,226.50	45%	50%	\$0.05	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	New	5,524.24	23	\$14,682.00	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	New	808.21	3	\$313.61	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$2,782.14	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	New	67.51	32	\$5,266.20	15%	52%	\$0.37	0	0	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	7,195.10	23	\$4,300.55	3%	at stock turnover	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	1,645.85	10	\$583.75	15%	45%	\$0.04	0	0	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	2,356.03	4	\$375.71	15%	50%	\$0.04	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	332.74	15	\$273.25	15%	60%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$27,889.75	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	37.90	15	\$14,792.56	20%	50%	\$0.18	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	123.60	5	\$21.74	15%	25%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	4.19	10	\$3.11	33%	60%	\$0.07	0	0	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	653.02	10	\$338.45	15%	30%	\$0.05	0	0	AEG research & analysis
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	88.65	15	\$18.34	100%	at stock turnover	\$0.00	0	1	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	7.05	15	\$4.70	100%	at stock turnover	\$0.02	0	0	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	6.16	15	\$2.84	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	35.77	3	\$369.50	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	12.25	10	\$1,745.05	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	New	29.51	15	\$11,227.94	20%	50%	\$0.15	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	99.00	5	\$21.74	15%	25%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	3.40	10	\$3.11	44%	60%	\$0.07	0	0	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	521.75	10	\$338.45	15%	30%	\$0.06	0	0	AEG research & analysis
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	88.65	15	\$18.34	100%	at stock turnover	\$0.00	0	0	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	7.05	15	\$4.70	100%	at stock turnover	\$0.02	0	0	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	6.16	15	\$2.84	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	28.65	3	\$313.61	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	2.39	32	\$5,266.20	15%	52%	\$0.37	0	0	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	2,691.89	23	\$23,068.89	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$9,911.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Heating	Energy Management System	per Facility	Existing	7,740.98	15	\$14,792.56	20%	50%	\$0.18	0	0	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,259.63	23	\$17,829.50	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	1,317.97	18	\$6,486.49	15%	75%	\$0.10	0	0	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,101.49	18	\$866.31	15%	25%	\$0.07	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	31,242.28	45	\$64,088.68	15%	25%	\$0.16	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	495.76	20	\$1,127.14	15%	25%	\$0.08	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	11,747.24	45	\$8,420.95	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Heating	Strategic Energy Management	per Facility	Existing	6,803.45	3	\$369.50	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,037.09	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	2,350.92	10	\$1,745.05	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	3,044.67	23	\$18,782.44	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$6,436.81	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Heating	Energy Management System	per Facility	New	7,270.14	15	\$11,227.94	20%	50%	\$0.15	0	0	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	2,267.34	23	\$12,502.32	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	New	591.43	18	\$4,365.73	15%	75%	\$0.11	0	0	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	879.62	18	\$701.75	15%	25%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	22,269.71	45	\$26,306.17	15%	25%	\$0.10	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	632.79	20	\$1,183.03	15%	25%	\$0.08	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	2,111.72	45	\$1,226.50	45%	50%	\$0.05	0	0	BEST Simulation
Chemical Mfg	Heating	Strategic Energy Management	per Facility	New	6,400.36	3	\$313.61	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$2,782.14	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	New	588.94	32	\$5,266.20	15%	52%	\$0.37	0	0	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	Existing	225.06	15	\$14,792.56	20%	50%	\$0.18	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	177.87	15	\$36.79	100%	at stock turnover	\$0.01	4	4	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	918.08	5	\$180.09	5%	40%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	1,185.26	5	\$239.09	15%	50%	\$0.03	0	0	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	1,404.31	12	\$1,484.22	3%	25%	\$0.09	0	1	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	241.50	16	\$27.95	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	1,554.66	10	\$791.79	7%	60%	\$0.05	1	1	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$381,923.81	15%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	536.03	8	\$127.31	7%	15%	\$0.03	0	0	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	102.55	5	\$9.32	10%	25%	\$0.01	0	0	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	10.07	15	\$6.70	100%	at stock turnover	\$0.02	2	3	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	16.86	15	\$7.77	100%	at stock turnover	\$0.03	1	1	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	232.96	3	\$369.50	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	77.78	10	\$1,745.05	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	New	185.26	15	\$11,227.94	20%	50%	\$0.15	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	177.87	15	\$36.79	100%	at stock turnover	\$0.00	2	2	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	734.65	5	\$180.09	5%	40%	\$0.04	0	0	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	938.90	5	\$239.09	15%	50%	\$0.04	0	0	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	1,167.57	12	\$1,397.28	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	200.66	16	\$27.95	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	1,280.93	10	\$754.53	22%	60%	\$0.05	0	0	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$381,923.81	18%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	445.27	8	\$124.20	7%	15%	\$0.03	0	0	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	83.17	5	\$9.32	10%	25%	\$0.01	0	0	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	10.07	15	\$6.70	100%	at stock turnover	\$0.02	1	1	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	16.86	15	\$7.77	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	193.56	3	\$313.61	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	15.01	32	\$5,266.20	15%	52%	\$0.37	0	0	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$310.51	0%	0%	\$10.00	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,001.36	3	\$1,726.42	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	869.91	3	\$369.50	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	300.60	10	\$1,745.05	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$310.51	0%	0%	\$10.00	0	0	MI - TRM
Chemical Mfg	Miscellaneous	Commissioning	per Facility	New	1,001.99	3	\$1,726.42	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	869.91	3	\$313.61	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	81.04	32	\$5,266.20	15%	52%	\$0.37	0	0	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	14,400.62	10	\$437.82	15%	75%	\$0.00	5	5	MI - TRM
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	15,831.44	15	\$6,368.50	15%	50%	\$0.04	3	3	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	3,738.69	15	\$1,229.61	15%	38%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	440.26	5	\$74.52	15%	50%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	6,878.64	20	\$5,287.94	15%	50%	\$0.07	1	1	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	3,790.51	15	\$1,238.92	15%	38%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	7,596.76	10	\$2,751.09	15%	50%	\$0.05	1	2	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$4,657.61	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	6,132.68	15	\$2,915.66	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	3,604.20	3	\$310.51	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	9,670.64	15	\$4,666.92	8%	38%	\$0.05	1	2	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,242.03	15%	50%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	5,333.70	10	\$462.66	8%	38%	\$0.01	1	1	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	Existing	1,800.08	15	\$133.52	8%	38%	\$0.01	0	0	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	Existing	919.75	3	\$37.26	8%	38%	\$0.01	0	0	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	2,744.65	10	\$344.66	8%	38%	\$0.02	0	0	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	526.24	8	\$825.95	10%	50%	\$0.25	1	1	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	373.37	8	\$291.88	5%	25%	\$0.13	0	0	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$1,953.09	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$602.38	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$3.11	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	9,572.10	17	\$742.11	5%	6%	\$0.01	0	0	E3T Website
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,511.73	10	\$350.87	15%	36%	\$0.03	1	1	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	9,267.45	17	\$4,027.28	25%	44%	\$0.05	5	5	RSMMeans 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$807.32	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$391.24	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	6,400.43	10	\$810.42	8%	38%	\$0.02	1	1	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	Existing	6,465.33	15	\$987.41	8%	38%	\$0.02	1	1	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	3,379.40	3	\$279.46	8%	38%	\$0.03	1	1	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	10,475.53	12	\$2,744.88	8%	38%	\$0.03	2	2	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	Existing	3,603.03	3	\$1,726.42	5%	39%	\$0.09	3	3	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	Existing	3,316.48	3	\$369.50	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$226.67	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	1,086.18	10	\$1,745.05	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$707.96	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	New	3,494.84	3	\$1,726.42	5%	39%	\$0.09	1	1	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	14,400.62	10	\$437.82	15%	75%	\$0.00	2	2	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	15,215.10	15	\$6,368.50	15%	50%	\$0.04	1	1	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessiccant Dryer	per Facility	New	3,627.16	15	\$1,229.61	15%	38%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	423.24	5	\$74.52	15%	50%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	6,522.11	20	\$5,287.94	15%	50%	\$0.07	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	3,626.68	15	\$1,238.92	15%	38%	\$0.04	0	0	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	7,303.50	10	\$2,751.09	15%	50%	\$0.05	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$4,657.61	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	New	5,866.12	15	\$2,915.66	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	3,483.48	3	\$310.51	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	9,217.26	15	\$4,666.92	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,242.03	15%	50%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	5,287.51	10	\$462.66	8%	38%	\$0.01	0	0	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	New	1,796.93	15	\$133.52	8%	38%	\$0.01	0	0	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	New	888.82	3	\$37.26	8%	38%	\$0.01	0	0	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	2,640.74	10	\$344.66	8%	38%	\$0.02	0	0	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	507.14	8	\$825.95	10%	50%	\$0.25	0	0	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	359.90	8	\$291.88	5%	25%	\$0.13	0	0	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$1,953.09	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$602.38	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$3.11	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	9,518.42	17	\$742.11	5%	6%	\$0.01	0	0	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,465.26	10	\$350.87	15%	36%	\$0.03	0	0	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	9,378.04	17	\$2,415.75	25%	44%	\$0.03	2	2	RSMMeans 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$807.32	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$391.24	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	6,345.02	10	\$810.42	8%	38%	\$0.02	0	0	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	New	6,462.41	15	\$987.41	8%	38%	\$0.02	0	0	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	New	3,259.00	3	\$279.46	8%	38%	\$0.03	0	0	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	10,051.93	12	\$2,744.88	8%	38%	\$0.03	1	1	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	New	3,309.28	3	\$313.61	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$226.67	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	New	281.76	32	\$5,266.20	15%	52%	\$0.37	0	0	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$707.96	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$378.82	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$338.45	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$1,592.90	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$1,900.30	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$28,535.61	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$1,217.19	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$58,772.80	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$6,526.86	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$59,735.37	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$34.16	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$108.68	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$639.64	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$21,878.33	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,617.58	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$43.47	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,887.88	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$19,655.10	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	Existing	81.02	5	\$21.74	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	808.06	10	\$437.82	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,381.44	5	\$1,903.41	15%	75%	\$0.33	2	2	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,470.76	15	\$723.48	15%	50%	\$0.06	0	0	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	Existing	2,901.08	18	\$1,735.74	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	1,018.39	3	\$96.26	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	3,025.09	15	\$1,446.96	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	Existing	562.65	3	\$1,726.42	5%	39%	\$0.09	3	1	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	Existing	2,037.49	3	\$369.50	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	Existing	703.35	10	\$1,745.05	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$378.82	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$338.45	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$1,592.90	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$1,900.30	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Commissioning	per Facility	New	560.91	3	\$1,726.42	5%	39%	\$0.09	1	0	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$28,535.61	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$1,217.19	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$58,772.80	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$6,526.86	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$59,735.37	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$34.16	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$108.68	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$639.64	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$21,878.33	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,617.58	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$43.47	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,887.88	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$19,655.10	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	New	81.07	5	\$21.74	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	806.81	10	\$437.82	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	New	1,368.29	5	\$1,903.41	15%	75%	\$0.33	1	1	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,510.31	15	\$723.48	15%	50%	\$0.06	0	0	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	New	2,868.89	18	\$1,735.74	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	New	1,018.39	3	\$96.26	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	2,969.44	15	\$1,446.96	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	New	2,037.49	3	\$313.61	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	New	184.29	32	\$5,266.20	15%	52%	\$0.37	0	0	6th Plan
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$9,911.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	195.08	3	\$369.50	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	67.32	10	\$1,745.05	15%	24%	\$0.05	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	71.46	15	\$15.53	15%	35%	\$0.02	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	2,478.01	20	\$2,751.82	100%	at stock turnover	\$0.11	0	0	BEST Simulation
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$6,436.81	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	New	62.58	3	\$313.61	0%	5%	\$0.01	0	0	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	5.90	32	\$5,266.20	15%	52%	\$0.37	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	22.92	15	\$6.21	15%	35%	\$0.03	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,324.86	20	\$1,652.46	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	7,551.41	23	\$15,731.90	2%	at stock turnover	\$0.16	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	4,139.28	23	\$2,378.71	6%	at stock turnover	\$0.06	3	3	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	1,322.08	10	\$368.31	15%	45%	\$0.04	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	381.54	15	\$246.54	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	99.77	15	\$86.54	15%	75%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	3,669.15	15	\$71,445.51	15%	50%	\$1.96	3	4	BEST Simulation
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	3,242.32	12	\$5,954.46	15%	50%	\$0.22	3	3	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	959.79	15	\$8,784.67	20%	50%	\$0.18	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	7,286.29	23	\$14,170.43	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	3,075.37	18	\$3,896.54	15%	75%	\$0.10	1	1	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	187.38	18	\$520.13	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	1,306.04	10	\$1,989.54	18%	30%	\$0.07	1	0	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	2,531.77	45	\$38,507.48	15%	25%	\$0.16	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	571.17	20	\$677.13	15%	25%	\$0.08	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	22.86	45	\$5,059.39	45%	50%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	5,913.53	23	\$16,141.28	4%	at stock turnover	\$0.28	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	875.12	3	\$136.21	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$151.64	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	298.25	10	\$630.37	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	6,760.76	23	\$3,599.09	3%	at stock turnover	\$0.06	2	2	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	1,900.03	10	\$549.92	15%	45%	\$0.04	0	0	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	2,675.08	4	\$350.24	15%	50%	\$0.03	0	0	1 BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	533.62	15	\$354.78	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	96.72	15	\$87.90	15%	75%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	5,430.95	23	\$11,031.41	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	296.51	23	\$28,204.84	6%	at stock turnover	\$9.90	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	1,628.32	10	\$447.12	15%	45%	\$0.04	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	268.82	15	\$171.89	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,154.44	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	1,617.98	15	\$71,445.51	15%	50%	\$4.21	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	1,766.10	12	\$3,868.21	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	New	525.76	15	\$6,643.40	20%	50%	\$0.15	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,242.42	23	\$9,936.49	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	1,850.91	18	\$2,623.82	15%	75%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	192.97	18	\$422.24	15%	25%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	700.98	10	\$1,190.46	18%	30%	\$0.08	0	0	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-12.25	45	\$15,805.37	15%	25%	\$0.10	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	503.20	20	\$709.91	15%	25%	\$0.08	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-11.11	45	\$737.25	45%	50%	\$0.05	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	3,319.25	23	\$8,821.72	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	485.61	3	\$102.52	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$406.81	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	40.56	32	\$1,716.49	15%	52%	\$0.32	0	0	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	4,323.20	23	\$2,584.00	3%	at stock turnover	\$0.06	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	988.91	10	\$350.78	15%	45%	\$0.04	0	0	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	1,415.62	4	\$225.29	15%	50%	\$0.04	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	199.93	15	\$163.72	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$4,077.97	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	14.75	15	\$8,784.67	20%	50%	\$0.18	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	48.11	5	\$8.26	15%	25%	\$0.03	0	0	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	1.63	10	\$1.63	33%	60%	\$0.09	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	254.20	10	\$132.12	15%	30%	\$0.05	1	3	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	34.51	15	\$7.14	100%	at stock turnover	\$0.00	6	7	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	2.75	15	\$1.83	100%	at stock turnover	\$0.02	4	4	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	2.40	15	\$1.11	100%	at stock turnover	\$0.03	4	8	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	13.92	3	\$136.21	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	4.77	10	\$630.37	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	11.49	15	\$6,643.40	20%	50%	\$0.15	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	38.54	5	\$8.26	15%	25%	\$0.03	0	0	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	1.33	10	\$1.00	44%	60%	\$0.06	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	203.10	10	\$131.58	15%	30%	\$0.06	0	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	34.51	15	\$7.14	100%	at stock turnover	\$0.00	2	3	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	2.75	15	\$1.83	100%	at stock turnover	\$0.02	2	2	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	2.40	15	\$1.11	100%	at stock turnover	\$0.03	2	3	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	11.15	3	\$102.52	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	0.93	32	\$1,716.49	15%	52%	\$0.32	0	0	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	1,617.43	23	\$13,861.01	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$5,954.46	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	Existing	4,651.19	15	\$8,784.67	20%	50%	\$0.18	5	5	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	756.85	23	\$10,712.90	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	791.91	18	\$3,896.54	15%	75%	\$0.10	0	0	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	661.83	18	\$520.13	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	18,772.02	45	\$38,507.48	15%	25%	\$0.16	7	7	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	297.88	20	\$677.13	15%	25%	\$0.08	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	7,058.36	45	\$5,059.39	45%	50%	\$0.06	1	1	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	4,087.87	3	\$136.21	0%	5%	\$0.01	1	1	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$151.64	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	1,412.56	10	\$630.37	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	1,829.40	23	\$11,285.48	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$3,868.21	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	New	4,368.29	15	\$6,643.40	20%	50%	\$0.15	2	2	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	1,362.33	23	\$7,512.05	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	355.36	18	\$2,623.82	15%	75%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	528.52	18	\$422.24	15%	25%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	13,380.82	45	\$15,805.37	15%	25%	\$0.10	2	2	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	380.21	20	\$709.91	15%	25%	\$0.08	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	1,268.83	45	\$737.25	45%	50%	\$0.05	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	3,845.68	3	\$102.52	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$406.81	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	353.86	32	\$1,716.49	15%	52%	\$0.32	0	0	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	87.61	15	\$8,784.67	20%	50%	\$0.18	1	1	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	69.24	15	\$14.32	100%	at stock turnover	\$0.01	53	60	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	342.25	5	\$70.01	5%	40%	\$0.03	1	3	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	476.50	5	\$93.26	15%	50%	\$0.03	2	4	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	546.65	12	\$578.34	3%	25%	\$0.09	4	8	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	94.01	16	\$10.62	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	605.17	10	\$307.92	7%	60%	\$0.05	8	16	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$11,169.04	15%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	208.66	8	\$49.94	7%	15%	\$0.03	1	1	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	39.92	5	\$4.00	10%	25%	\$0.01	0	0	AEG research & analysis
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	3.92	15	\$2.61	100%	at stock turnover	\$0.02	32	35	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	6.56	15	\$3.03	100%	at stock turnover	\$0.03	8	16	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	90.68	3	\$136.21	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	30.28	10	\$630.37	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	72.11	15	\$6,643.40	20%	50%	\$0.15	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	69.24	15	\$14.32	100%	at stock turnover	\$0.00	20	23	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	285.97	5	\$69.92	5%	40%	\$0.04	0	1	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	365.48	5	\$93.17	15%	50%	\$0.04	1	1	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	454.49	12	\$543.65	4%	25%	\$0.09	1	2	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	78.11	16	\$10.62	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	498.62	10	\$294.03	22%	60%	\$0.05	2	2	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$11,169.04	18%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	173.33	8	\$48.67	7%	15%	\$0.03	0	0	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	32.37	5	\$3.90	10%	25%	\$0.01	0	0	AEG research & analysis
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	3.92	15	\$2.61	100%	at stock turnover	\$0.02	12	14	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	6.56	15	\$3.03	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	75.35	3	\$102.52	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	5.84	32	\$1,716.49	15%	52%	\$0.32	0	0	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$45.40	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	376.44	3	\$176.53	5%	39%	\$0.07	5	5	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	327.02	3	\$136.21	0%	5%	\$0.01	1	1	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	113.00	10	\$630.37	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$45.40	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	376.67	3	\$176.53	5%	39%	\$0.07	2	2	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	327.02	3	\$102.52	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	30.46	32	\$1,716.49	15%	52%	\$0.32	0	0	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	550.92	10	\$16.80	15%	75%	\$0.00	6	6	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	605.66	15	\$243.63	15%	50%	\$0.04	4	4	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	144.32	15	\$47.04	15%	38%	\$0.04	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	16.84	5	\$2.91	15%	50%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	263.15	20	\$202.31	15%	50%	\$0.07	2	2	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	144.51	15	\$47.40	15%	38%	\$0.04	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	293.48	10	\$105.24	15%	50%	\$0.05	2	2	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$681.04	15%	30%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	236.91	15	\$111.60	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	137.88	3	\$11.90	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	373.57	15	\$178.52	8%	38%	\$0.05	2	2	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$181.61	15%	50%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	451.14	10	\$39.14	8%	38%	\$0.01	2	3	6th Plan
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	151.99	15	\$11.44	8%	38%	\$0.01	1	1	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	77.80	3	\$3.27	8%	38%	\$0.02	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	232.15	10	\$29.24	8%	38%	\$0.02	1	1	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	31.63	8	\$55.12	10%	50%	\$0.28	1	1	Developed from RTF
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	22.44	8	\$19.52	5%	25%	\$0.14	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$285.58	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$316.18	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.18	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	568.26	17	\$49.76	5%	6%	\$0.01	0	0	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	89.76	10	\$23.34	15%	36%	\$0.04	1	1	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	548.93	17	\$269.24	25%	44%	\$0.05	8	8	RSMMeans 2013
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$423.70	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$204.86	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	93.99	10	\$11.90	8%	38%	\$0.02	1	1	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	94.94	15	\$14.53	8%	38%	\$0.02	1	1	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	49.63	3	\$4.09	8%	38%	\$0.03	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	154.25	12	\$40.32	8%	38%	\$0.03	1	1	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	216.53	3	\$176.53	5%	39%	\$0.07	5	5	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	197.56	3	\$136.21	0%	5%	\$0.01	1	1	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$118.86	15%	25%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	66.60	10	\$630.37	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$48.31	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	New	242.47	3	\$176.53	5%	39%	\$0.07	3	3	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	550.92	10	\$16.80	15%	75%	\$0.00	2	2	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	582.08	15	\$243.63	15%	50%	\$0.04	1	1	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	138.76	15	\$47.04	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	16.19	5	\$2.91	15%	50%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	249.51	20	\$202.31	15%	50%	\$0.07	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	138.74	15	\$47.40	15%	38%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	279.41	10	\$105.24	15%	50%	\$0.05	1	1	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$681.04	15%	30%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	224.42	15	\$111.60	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	133.27	3	\$11.90	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	352.62	15	\$178.52	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$181.61	15%	50%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	447.24	10	\$39.14	8%	38%	\$0.01	1	1	6th Plan
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	New	151.99	15	\$11.44	8%	38%	\$0.01	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	75.18	3	\$3.27	8%	38%	\$0.02	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	223.36	10	\$29.24	8%	38%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	35.18	8	\$55.12	10%	50%	\$0.25	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	24.97	8	\$19.52	5%	25%	\$0.13	0	0	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$285.58	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$316.18	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.18	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	641.31	17	\$49.76	5%	6%	\$0.01	0	0	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	99.48	10	\$23.34	15%	36%	\$0.03	1	1	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	635.02	17	\$161.54	25%	44%	\$0.03	4	4	RSMMeans 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$423.70	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$204.86	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	93.17	10	\$11.90	8%	38%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	94.90	15	\$14.53	8%	38%	\$0.02	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	47.86	3	\$4.09	8%	38%	\$0.03	0	0	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	147.61	12	\$40.32	8%	38%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	223.03	3	\$102.52	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$118.86	15%	25%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	19.55	32	\$1,716.49	15%	52%	\$0.32	0	0	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$48.31	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$5.54	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	668.80	1	\$4.36	15%	75%	\$0.01	7	7	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	204.40	10	\$20.43	15%	75%	\$0.01	2	2	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	114.31	20	\$24.34	15%	75%	\$0.02	1	1	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,172.50	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	62.02	10	\$15.62	15%	75%	\$0.03	1	1	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	1,215.87	10	\$752.96	15%	75%	\$0.07	13	14	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	74.69	10	\$83.63	15%	75%	\$0.07	1	1	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	649.42	10	\$765.22	15%	75%	\$0.08	5	9	6th Plan
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$7.36	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$15.89	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$93.35	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,199.07	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$317.82	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$5.45	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$398.09	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$2,387.99	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	83.92	5	\$22.70	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	830.64	10	\$454.30	15%	75%	\$0.08	9	9	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	158.92	5	\$231.37	15%	75%	\$0.33	9	9	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	263.87	15	\$126.13	15%	50%	\$0.06	2	2	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	506.10	18	\$302.74	15%	50%	\$0.06	3	3	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	177.66	3	\$16.80	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	520.45	15	\$252.26	15%	50%	\$0.06	3	3	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	71.52	3	\$176.53	5%	39%	\$0.07	11	2	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	244.89	3	\$136.21	0%	5%	\$0.01	1	1	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	84.06	10	\$630.37	15%	24%	\$0.04	1	1	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$5.54	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	668.80	1	\$4.36	15%	75%	\$0.01	3	3	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	201.84	10	\$20.43	15%	75%	\$0.01	1	1	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	112.42	20	\$24.34	15%	75%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	New	84.75	3	\$176.53	5%	39%	\$0.07	3	1	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,172.50	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	59.78	10	\$15.62	15%	75%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	1,167.18	10	\$752.96	15%	75%	\$0.07	5	5	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	60.66	10	\$83.63	15%	75%	\$0.07	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	521.86	10	\$765.22	15%	75%	\$0.08	2	2	6th Plan
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$7.36	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$15.89	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$93.35	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,199.07	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$317.82	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$5.45	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$398.09	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$2,387.99	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$22.70	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$454.30	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	135.01	5	\$231.37	15%	75%	\$0.37	2	2	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	263.48	15	\$126.13	15%	50%	\$0.06	1	1	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	500.49	18	\$302.74	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	177.66	3	\$16.80	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	518.03	15	\$252.26	15%	50%	\$0.06	1	1	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	New	214.80	3	\$102.52	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	18.47	32	\$1,716.49	15%	52%	\$0.32	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$5,954.46	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	117.22	3	\$136.21	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	40.45	10	\$630.37	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	42.93	15	\$9.26	15%	35%	\$0.02	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	1,488.92	20	\$1,653.44	100%	at stock turnover	\$0.11	3	3	BEST Simulation
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$3,868.21	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	37.60	3	\$102.52	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	3.54	32	\$1,716.49	15%	52%	\$0.32	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	13.77	15	\$3.81	15%	35%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	796.04	20	\$992.88	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	10,433.46	23	\$21,736.10	2%	at stock turnover	\$0.16	46	44	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	5,719.06	23	\$3,286.56	6%	at stock turnover	\$0.06	60	61	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	1,818.36	10	\$508.92	15%	45%	\$0.04	9	10	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	524.76	15	\$340.57	15%	60%	\$0.07	4	4	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	137.22	15	\$119.65	15%	75%	\$0.09	1	2	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	5,046.61	15	\$82,222.15	15%	50%	\$1.63	76	87	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	4,459.50	12	\$8,227.02	15%	50%	\$0.22	68	82	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	Existing	1,320.09	15	\$12,420.79	20%	50%	\$0.17	17	19	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	10,067.16	23	\$19,578.69	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	4,229.83	18	\$5,383.73	15%	75%	\$0.10	17	20	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	257.73	18	\$718.56	15%	25%	\$0.07	1	1	BEST Simulation
Food Mfg	Cooling	HVAC - Economizer	per Facility	Existing	1,796.31	10	\$2,748.92	18%	30%	\$0.07	14	6	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	3,482.20	45	\$53,204.25	15%	25%	\$0.16	15	17	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	785.58	20	\$935.61	15%	25%	\$0.08	3	4	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	31.43	45	\$6,990.45	45%	50%	\$0.06	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	8,170.48	23	\$22,301.73	4%	at stock turnover	\$0.28	15	15	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	Existing	1,209.12	3	\$954.42	0%	18%	\$0.03	10	12	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$43.68	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	410.22	10	\$1,240.65	15%	24%	\$0.05	2	2	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	9,341.06	23	\$4,972.71	3%	at stock turnover	\$0.06	50	50	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	2,613.31	10	\$759.83	15%	45%	\$0.04	6	8	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	3,679.29	4	\$483.84	15%	50%	\$0.03	11	13	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	733.94	15	\$490.11	15%	60%	\$0.07	3	3	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	133.03	15	\$121.43	15%	75%	\$0.09	1	1	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,503.71	23	\$15,241.63	2%	at stock turnover	\$0.17	19	18	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	3,550.66	23	\$162.30	6%	at stock turnover	\$0.00	21	21	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	1,976.87	10	\$617.82	15%	45%	\$0.04	4	4	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	326.41	15	\$237.43	15%	60%	\$0.07	1	1	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$619.80	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	2,120.64	15	\$82,222.15	15%	50%	\$3.51	12	13	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	2,314.51	12	\$5,344.54	15%	50%	\$0.25	13	14	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	New	689.01	15	\$9,461.19	20%	50%	\$0.15	3	4	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,243.23	23	\$13,728.83	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	2,545.78	18	\$3,625.17	15%	75%	\$0.11	4	4	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	252.94	18	\$583.33	15%	25%	\$0.06	0	0	BEST Simulation
Food Mfg	Cooling	HVAC - Economizer	per Facility	New	909.14	10	\$1,644.86	18%	30%	\$0.08	4	2	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-16.07	45	\$21,837.57	15%	25%	\$0.10	0	0	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	659.85	20	\$980.86	15%	25%	\$0.08	1	1	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-14.56	45	\$1,018.58	45%	50%	\$0.05	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	New	4,586.07	23	\$12,188.60	4%	at stock turnover	\$0.28	5	5	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	New	639.10	3	\$785.65	0%	18%	\$0.03	2	2	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$117.04	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	New	53.17	32	\$3,653.28	15%	52%	\$0.34	0	0	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	5,973.18	23	\$3,570.20	3%	at stock turnover	\$0.06	18	18	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	1,360.18	10	\$484.58	15%	45%	\$0.04	1	1	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	1,947.07	4	\$311.21	15%	50%	\$0.04	2	2	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	274.99	15	\$226.14	15%	60%	\$0.07	0	0	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$1,173.24	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	42.07	15	\$12,420.79	20%	50%	\$0.17	7	12	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	138.03	5	\$23.62	15%	25%	\$0.03	8	17	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	4.65	10	\$4.81	33%	60%	\$0.09	1	2	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	724.80	10	\$378.40	15%	30%	\$0.05	64	133	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	98.84	15	\$20.44	100%	at stock turnover	\$0.00	317	343	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	7.86	15	\$5.24	100%	at stock turnover	\$0.02	203	223	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	6.87	15	\$3.17	100%	at stock turnover	\$0.03	207	411	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	39.52	3	\$954.42	0%	18%	\$0.03	4	10	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	13.60	10	\$1,240.65	15%	24%	\$0.05	1	1	6th Plan
Food Mfg	Exterior Lighting	Energy Management System	per Facility	New	32.76	15	\$9,461.19	20%	50%	\$0.15	2	3	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	109.88	5	\$23.51	15%	25%	\$0.03	3	4	Illinois TRM
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	3.78	10	\$2.93	44%	60%	\$0.06	0	0	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	579.10	10	\$376.73	15%	30%	\$0.06	20	29	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	98.84	15	\$20.44	100%	at stock turnover	\$0.00	123	137	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	7.86	15	\$5.24	100%	at stock turnover	\$0.02	79	87	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	6.87	15	\$3.17	100%	at stock turnover	\$0.03	80	153	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	31.94	3	\$785.65	0%	18%	\$0.03	1	2	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	2.65	32	\$3,653.28	15%	52%	\$0.34	0	0	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	2,234.73	23	\$19,151.17	2%	at stock turnover	\$0.16	10	9	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$8,227.02	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	Existing	6,397.09	15	\$12,420.79	20%	50%	\$0.17	119	120	BEST Simulation
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,045.71	23	\$14,801.57	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	1,089.17	18	\$5,383.73	15%	75%	\$0.10	5	5	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	910.26	18	\$718.56	15%	25%	\$0.07	6	6	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	25,818.35	45	\$53,204.25	15%	25%	\$0.16	161	162	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	409.69	20	\$935.61	15%	25%	\$0.08	3	3	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	9,707.81	45	\$6,990.45	45%	50%	\$0.06	30	30	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Heating	Strategic Energy Management	per Facility	Existing	5,648.04	3	\$954.42	0%	18%	\$0.03	64	64	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$43.68	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	1,942.78	10	\$1,240.65	15%	24%	\$0.05	11	11	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	2,527.60	23	\$15,592.67	2%	at stock turnover	\$0.17	6	6	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$5,344.54	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	New	6,007.99	15	\$9,461.19	20%	50%	\$0.15	40	40	BEST Simulation
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	1,882.28	23	\$10,379.09	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	New	488.75	18	\$3,625.17	15%	75%	\$0.11	1	1	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	726.91	18	\$583.33	15%	25%	\$0.06	2	2	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	18,403.47	45	\$21,837.57	15%	25%	\$0.10	41	41	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	522.93	20	\$980.86	15%	25%	\$0.08	1	1	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	1,745.10	45	\$1,018.58	45%	50%	\$0.05	2	2	BEST Simulation
Food Mfg	Heating	Strategic Energy Management	per Facility	New	5,313.41	3	\$785.65	0%	18%	\$0.03	21	21	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$117.04	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	New	486.69	32	\$3,653.28	15%	52%	\$0.34	4	4	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	Existing	249.80	15	\$12,420.79	20%	50%	\$0.17	44	73	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	198.31	15	\$41.01	100%	at stock turnover	\$0.01	2,635	2,970	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	1,018.97	5	\$200.43	5%	40%	\$0.03	74	140	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	1,315.51	5	\$267.21	15%	50%	\$0.03	95	182	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	1,558.68	12	\$1,656.25	3%	25%	\$0.09	201	410	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	269.71	16	\$30.51	1%	3%	\$0.01	3	7	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	1,725.51	10	\$882.00	7%	60%	\$0.05	411	780	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$12,853.74	15%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	594.93	8	\$143.17	7%	15%	\$0.03	32	59	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	114.52	5	\$11.39	10%	25%	\$0.01	3	8	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	11.23	15	\$7.47	100%	at stock turnover	\$0.02	1,575	1,723	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	18.80	15	\$8.67	100%	at stock turnover	\$0.03	409	814	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	259.41	3	\$954.42	0%	18%	\$0.03	29	60	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	86.32	10	\$1,240.65	15%	24%	\$0.05	5	8	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	New	205.63	15	\$9,461.19	20%	50%	\$0.15	15	20	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	198.31	15	\$41.01	100%	at stock turnover	\$0.00	1,019	1,133	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	815.39	5	\$200.23	5%	40%	\$0.04	23	32	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	1,042.11	5	\$266.90	15%	50%	\$0.04	30	41	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	1,295.96	12	\$1,557.18	4%	25%	\$0.09	63	89	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	224.09	16	\$30.41	1%	3%	\$0.01	1	2	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	1,421.74	10	\$842.08	22%	60%	\$0.05	77	108	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$12,853.74	18%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	494.21	8	\$139.41	7%	15%	\$0.03	10	14	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	92.88	5	\$11.29	10%	25%	\$0.01	1	2	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	11.23	15	\$7.47	100%	at stock turnover	\$0.02	615	675	AEO 2013
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	18.80	15	\$8.67	100%	at stock turnover	\$0.03	158	302	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	215.48	3	\$785.65	0%	18%	\$0.03	9	13	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	16.67	32	\$3,653.28	15%	52%	\$0.34	1	2	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$13.06	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,002.50	3	\$921.29	10%	37%	\$0.07	170	171	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	874.89	3	\$954.42	0%	18%	\$0.03	99	99	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	300.94	10	\$1,240.65	15%	24%	\$0.05	18	18	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$13.06	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	New	1,003.13	3	\$921.29	10%	37%	\$0.07	56	56	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	874.89	3	\$785.65	0%	18%	\$0.03	33	33	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	81.36	32	\$3,653.28	15%	52%	\$0.34	6	6	6th Plan
Food Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,124.77	10	\$95.10	15%	75%	\$0.00	607	607	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	3,384.02	15	\$1,381.73	15%	50%	\$0.04	370	395	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	812.63	15	\$267.00	15%	38%	\$0.04	58	60	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	95.10	5	\$16.41	15%	50%	\$0.04	10	11	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,485.85	20	\$1,147.33	15%	50%	\$0.07	157	179	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	813.70	15	\$268.99	15%	38%	\$0.04	58	61	MI - TRM
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,639.95	10	\$597.12	15%	50%	\$0.05	177	194	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$783.76	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	1,293.33	15	\$632.76	8%	38%	\$0.05	118	133	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	781.29	3	\$67.51	8%	38%	\$0.03	74	77	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,118.23	15	\$1,012.42	8%	38%	\$0.05	194	216	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$209.00	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	8,228.72	10	\$712.91	8%	38%	\$0.01	791	799	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	Existing	2,770.72	15	\$207.96	8%	38%	\$0.01	269	269	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,418.96	3	\$59.15	8%	38%	\$0.01	133	138	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	4,234.38	10	\$532.23	8%	38%	\$0.02	394	411	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	317.43	8	\$435.88	10%	50%	\$0.22	157	167	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	225.22	8	\$154.56	5%	25%	\$0.11	56	59	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$82.14	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$845.94	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$3.24	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	5,755.42	17	\$393.24	5%	6%	\$0.01	74	75	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	902.81	10	\$184.76	15%	36%	\$0.03	241	248	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	5,553.08	17	\$2,129.12	25%	44%	\$0.04	1,331	1,366	RSMMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,133.64	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$548.01	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	3,813.66	10	\$481.86	8%	38%	\$0.02	367	370	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	Existing	3,852.34	15	\$587.41	8%	38%	\$0.02	374	374	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	2,013.60	3	\$167.10	8%	38%	\$0.03	192	195	Scaled from Optimization
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	6,202.52	12	\$1,631.69	8%	38%	\$0.03	587	602	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	Existing	2,170.02	3	\$921.29	10%	37%	\$0.07	729	758	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,949.06	3	\$954.42	0%	18%	\$0.03	445	465	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$318.00	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	656.50	10	\$1,240.65	15%	24%	\$0.05	77	80	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$320.51	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Commissioning	per Facility	New	1,874.85	3	\$921.29	10%	37%	\$0.07	289	289	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	3,124.77	10	\$95.10	15%	75%	\$0.00	215	215	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	3,286.56	15	\$1,381.73	15%	50%	\$0.04	131	131	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	783.49	15	\$267.00	15%	38%	\$0.04	20	20	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	91.42	5	\$16.41	15%	50%	\$0.04	4	4	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	1,408.87	20	\$1,147.33	15%	50%	\$0.07	56	56	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	783.38	15	\$268.99	15%	38%	\$0.04	20	20	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	1,577.62	10	\$597.12	15%	50%	\$0.05	63	63	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$783.76	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	New	1,267.15	15	\$632.76	8%	38%	\$0.05	43	43	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	752.45	3	\$67.51	8%	38%	\$0.03	26	26	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	1,991.04	15	\$1,012.42	8%	38%	\$0.05	68	68	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$209.00	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	8,157.47	10	\$712.91	8%	38%	\$0.01	280	280	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	New	2,772.27	15	\$207.96	8%	38%	\$0.01	95	95	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	New	1,371.25	3	\$59.15	8%	38%	\$0.01	47	47	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	4,074.05	10	\$532.23	8%	38%	\$0.02	139	139	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	272.83	8	\$435.88	10%	50%	\$0.25	62	62	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	193.62	8	\$154.56	5%	25%	\$0.13	22	22	Developed from RTF
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$82.14	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$845.94	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$3.24	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	5,085.32	17	\$393.24	5%	6%	\$0.01	29	29	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	769.66	10	\$184.76	15%	36%	\$0.03	92	92	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,951.81	17	\$1,277.54	25%	44%	\$0.03	538	538	RSMMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,133.64	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$548.01	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	3,780.64	10	\$481.86	8%	38%	\$0.02	130	130	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	New	3,850.60	15	\$587.41	8%	38%	\$0.02	132	132	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,929.66	3	\$167.10	8%	38%	\$0.03	66	66	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	5,951.77	12	\$1,631.69	8%	38%	\$0.03	204	204	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	New	1,683.77	3	\$785.65	0%	18%	\$0.03	173	173	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$318.00	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	New	151.58	32	\$3,653.28	15%	52%	\$0.34	32	32	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$320.51	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$224.57	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$2.51	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$12.02	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$14.32	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$1,200.52	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$9.20	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$442.88	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$49.22	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$450.19	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$23.41	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$4.60	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$26.86	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$920.45	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,536.91	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$26.33	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,268.76	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$11,545.90	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	Existing	37.94	5	\$10.35	15%	75%	\$0.07	7	7	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	376.06	10	\$206.29	15%	75%	\$0.08	72	73	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	Existing	790.71	5	\$1,118.69	15%	75%	\$0.33	753	768	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	2,949.72	15	\$1,456.76	15%	50%	\$0.06	330	338	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Refrigeration - System Controls	per Facility	Existing	5,818.34	18	\$3,496.22	15%	50%	\$0.06	648	669	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	2,042.43	3	\$194.27	15%	50%	\$0.04	231	231	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	6,067.00	15	\$2,913.51	15%	50%	\$0.06	685	689	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	Existing	462.91	3	\$921.29	10%	37%	\$0.07	1,001	202	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	Existing	1,196.94	3	\$954.42	0%	18%	\$0.03	349	349	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	Existing	410.30	10	\$1,240.65	15%	24%	\$0.05	62	62	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$224.57	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$2.51	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$12.02	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$14.32	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	New	706.56	3	\$921.29	10%	37%	\$0.07	349	159	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$1,200.52	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$9.20	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$442.88	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$49.22	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$450.19	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$23.41	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$4.60	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$26.86	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$920.45	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,536.91	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$26.33	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,268.76	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$11,545.90	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$10.35	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$206.29	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	New	946.89	5	\$1,118.69	15%	75%	\$0.27	260	260	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	3,029.03	15	\$1,456.76	15%	50%	\$0.06	121	121	Developed from RTF
Food Mfg	Process	Refrigeration - System Controls	per Facility	New	5,753.81	18	\$3,496.22	15%	50%	\$0.06	230	230	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	New	2,042.43	3	\$194.27	15%	50%	\$0.04	82	82	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	5,955.42	15	\$2,913.51	15%	50%	\$0.06	239	239	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	New	1,454.80	3	\$785.65	0%	18%	\$0.03	120	120	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	New	127.53	32	\$3,653.28	15%	52%	\$0.34	22	22	6th Plan
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$8,227.02	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	161.74	3	\$954.42	0%	18%	\$0.03	8	11	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	55.64	10	\$1,240.65	15%	24%	\$0.05	1	2	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	59.42	15	\$12.75	15%	35%	\$0.02	3	4	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	2,057.18	20	\$2,284.49	100%	at stock turnover	\$0.11	75	75	BEST Simulation
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$5,344.54	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	New	51.96	3	\$785.65	0%	18%	\$0.03	1	1	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	4.87	32	\$3,653.28	15%	52%	\$0.34	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	18.94	15	\$5.33	15%	35%	\$0.03	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,099.86	20	\$1,371.83	100%	at stock turnover	\$0.13	10	10	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	69,213.19	23	\$144,192.30	2%	at stock turnover	\$0.16	8	8	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	37,938.95	23	\$21,802.29	6%	at stock turnover	\$0.06	11	11	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	12,117.66	10	\$3,376.06	15%	45%	\$0.04	2	2	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,497.03	15	\$2,259.28	15%	60%	\$0.07	1	1	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	914.46	15	\$793.25	15%	75%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	33,629.97	15	\$532,535.50	15%	50%	\$1.59	14	16	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	Existing	29,717.82	12	\$54,576.77	15%	50%	\$0.22	12	15	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	Existing	8,797.03	15	\$81,379.52	20%	50%	\$0.18	3	4	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	66,783.25	23	\$129,880.49	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	Existing	28,187.59	18	\$35,714.67	15%	75%	\$0.10	3	4	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,717.49	18	\$4,766.96	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	Existing	11,970.61	10	\$18,235.35	18%	30%	\$0.07	3	1	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	23,205.20	45	\$352,944.20	15%	25%	\$0.16	3	3	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	Existing	5,235.09	20	\$6,206.60	15%	25%	\$0.08	1	1	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	209.48	45	\$46,372.82	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	Existing	54,201.05	23	\$147,944.51	4%	at stock turnover	\$0.28	3	3	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	Existing	8,021.04	3	\$1,296.14	0%	5%	\$0.01	0	1	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$565.16	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	Existing	2,733.68	10	\$6,001.52	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	61,966.41	23	\$32,987.81	3%	at stock turnover	\$0.06	9	9	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	17,414.89	10	\$5,040.41	15%	45%	\$0.04	1	1	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	24,518.69	4	\$3,210.24	15%	50%	\$0.03	2	2	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	4,890.91	15	\$3,251.53	15%	60%	\$0.07	0	1	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	886.51	15	\$805.44	15%	75%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	49,777.88	23	\$101,109.49	2%	at stock turnover	\$0.17	3	3	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	23,554.25	23	\$34,323.46	6%	at stock turnover	\$0.15	4	4	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	13,173.81	10	\$4,098.25	15%	45%	\$0.04	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,175.16	15	\$1,575.00	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$8,029.32	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	14,131.43	15	\$532,535.50	15%	50%	\$3.42	2	2	BEST Simulation
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	New	15,423.54	12	\$35,454.09	15%	50%	\$0.25	2	3	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	New	4,591.44	15	\$61,749.89	20%	50%	\$0.15	1	1	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	48,049.91	23	\$91,073.87	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	New	16,964.69	18	\$24,048.70	15%	75%	\$0.11	1	1	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,685.60	18	\$3,870.16	15%	25%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	New	6,058.48	10	\$10,911.29	18%	30%	\$0.08	1	0	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	New	-107.08	45	\$144,865.50	15%	25%	\$0.10	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	New	4,397.15	20	\$6,507.11	15%	25%	\$0.08	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-97.01	45	\$6,757.54	45%	50%	\$0.05	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	New	30,422.94	23	\$80,856.35	4%	at stock turnover	\$0.28	1	1	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	New	4,239.66	3	\$986.15	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,516.12	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	New	354.28	32	\$16,508.06	15%	52%	\$0.32	0	0	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	39,624.69	23	\$23,683.90	3%	at stock turnover	\$0.06	3	3	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	9,063.97	10	\$3,214.98	15%	45%	\$0.04	0	0	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	12,975.05	4	\$2,065.03	15%	50%	\$0.04	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,832.48	15	\$1,500.55	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$15,198.38	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	Existing	201.78	15	\$81,379.52	20%	50%	\$0.18	1	2	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	658.04	5	\$113.03	15%	25%	\$0.03	1	2	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	22.30	10	\$23.01	33%	60%	\$0.09	0	0	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	3,476.69	10	\$1,807.16	15%	30%	\$0.05	8	17	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	471.99	15	\$97.62	100%	at stock turnover	\$0.00	41	44	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	37.56	15	\$25.00	100%	at stock turnover	\$0.02	26	29	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	32.80	15	\$15.12	100%	at stock turnover	\$0.03	27	53	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	Existing	190.43	3	\$1,296.14	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	65.22	10	\$6,001.52	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	New	157.13	15	\$61,749.89	20%	50%	\$0.15	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	527.06	5	\$112.35	15%	25%	\$0.03	0	0	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	18.12	10	\$14.21	44%	60%	\$0.06	0	0	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,777.80	10	\$1,799.03	15%	30%	\$0.06	3	4	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	471.99	15	\$97.62	100%	at stock turnover	\$0.00	16	18	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	37.56	15	\$25.00	100%	at stock turnover	\$0.02	10	11	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	32.80	15	\$15.12	100%	at stock turnover	\$0.03	10	20	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	New	152.52	3	\$986.15	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	New	12.73	32	\$16,508.06	15%	52%	\$0.32	0	0	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	14,824.71	23	\$127,044.47	2%	at stock turnover	\$0.16	2	2	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$54,576.77	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	Existing	42,630.96	15	\$81,379.52	20%	50%	\$0.18	21	22	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	6,937.01	23	\$98,190.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	Existing	7,258.31	18	\$35,714.67	15%	75%	\$0.10	1	1	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	6,066.09	18	\$4,766.96	15%	25%	\$0.07	1	1	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	Existing	172,056.77	45	\$352,944.20	15%	25%	\$0.16	29	29	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,730.25	20	\$6,206.60	15%	25%	\$0.08	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	64,694.11	45	\$46,372.82	45%	50%	\$0.06	5	5	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	Existing	37,467.81	3	\$1,296.14	0%	5%	\$0.01	3	3	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$565.16	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	Existing	12,946.94	10	\$6,001.52	15%	24%	\$0.04	2	2	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	16,767.53	23	\$103,438.19	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$35,454.09	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	New	40,037.96	15	\$61,749.89	20%	50%	\$0.15	7	7	BEST Simulation
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	12,486.61	23	\$68,852.48	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	New	3,257.09	18	\$24,048.70	15%	75%	\$0.11	0	0	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	4,844.21	18	\$3,870.16	15%	25%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	New	122,643.21	45	\$144,865.50	15%	25%	\$0.10	7	7	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	New	3,484.89	20	\$6,507.11	15%	25%	\$0.08	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	New	11,629.61	45	\$6,757.54	45%	50%	\$0.05	0	0	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	New	35,247.93	3	\$986.15	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,516.12	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	New	3,243.38	32	\$16,508.06	15%	52%	\$0.32	1	1	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	Existing	1,198.20	15	\$81,379.52	20%	50%	\$0.18	6	9	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	947.00	15	\$195.86	100%	at stock turnover	\$0.01	340	383	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	4,887.88	5	\$957.05	5%	40%	\$0.03	10	18	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	6,310.32	5	\$1,275.84	15%	50%	\$0.03	12	24	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	7,476.58	12	\$7,909.52	3%	25%	\$0.09	26	53	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	1,285.76	16	\$145.52	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	8,277.04	10	\$4,211.96	7%	60%	\$0.05	53	101	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$83,250.97	15%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	2,853.85	8	\$683.61	7%	15%	\$0.03	4	8	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	545.98	5	\$54.15	10%	25%	\$0.01	0	1	AEG research & analysis
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	53.62	15	\$35.69	100%	at stock turnover	\$0.02	203	222	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	89.77	15	\$41.39	100%	at stock turnover	\$0.03	53	105	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	Existing	1,240.27	3	\$1,296.14	0%	5%	\$0.01	1	2	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	414.08	10	\$6,001.52	15%	24%	\$0.04	1	1	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	New	986.31	15	\$61,749.89	20%	50%	\$0.15	2	3	BEST Simulation
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	947.00	15	\$195.86	100%	at stock turnover	\$0.00	131	146	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	3,911.27	5	\$955.69	5%	40%	\$0.04	3	4	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	4,998.74	5	\$1,274.48	15%	50%	\$0.04	4	5	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	6,216.14	12	\$7,436.41	4%	25%	\$0.09	8	11	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	1,068.32	16	\$144.84	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	6,819.69	10	\$4,021.09	22%	60%	\$0.05	10	14	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$83,250.97	18%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	2,370.64	8	\$665.33	7%	15%	\$0.03	1	2	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	442.78	5	\$54.15	10%	25%	\$0.01	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	53.62	15	\$35.69	100%	at stock turnover	\$0.02	79	87	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	89.77	15	\$41.39	100%	at stock turnover	\$0.03	20	39	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	New	1,030.51	3	\$986.15	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	New	79.94	32	\$16,508.06	15%	52%	\$0.32	0	0	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$169.21	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	Existing	3,505.04	3	\$1,814.60	5%	39%	\$0.07	20	20	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	Existing	3,044.94	3	\$1,296.14	0%	5%	\$0.01	3	3	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	1,052.17	10	\$6,001.52	15%	24%	\$0.04	2	2	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$169.21	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	New	3,507.25	3	\$1,814.60	5%	39%	\$0.07	7	7	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	New	3,044.94	3	\$986.15	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	New	283.65	32	\$16,508.06	15%	52%	\$0.32	1	1	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	15,039.52	10	\$457.54	15%	75%	\$0.00	79	79	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	16,351.48	15	\$6,650.60	15%	50%	\$0.04	48	52	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	3,929.03	15	\$1,285.31	15%	38%	\$0.04	8	8	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	459.80	5	\$79.19	15%	50%	\$0.04	1	1	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	7,131.55	20	\$5,522.31	15%	50%	\$0.07	20	23	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	3,934.21	15	\$1,294.79	15%	38%	\$0.04	8	8	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	7,928.96	10	\$2,873.85	15%	50%	\$0.05	23	25	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,538.14	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	Existing	6,253.05	15	\$3,045.77	8%	38%	\$0.05	15	17	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	Existing	3,764.10	3	\$324.88	8%	38%	\$0.03	10	10	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	10,241.39	15	\$4,872.55	8%	38%	\$0.05	25	28	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$676.84	15%	50%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	26,165.21	10	\$2,270.79	8%	38%	\$0.01	68	69	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	Existing	8,810.18	15	\$662.62	8%	38%	\$0.01	23	23	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	Existing	4,511.94	3	\$188.16	8%	38%	\$0.01	11	12	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	13,464.26	10	\$1,695.48	8%	38%	\$0.02	34	35	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	724.63	8	\$1,062.63	10%	50%	\$0.23	10	10	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	514.13	8	\$377.00	5%	25%	\$0.12	3	4	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$1,063.99	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,944.24	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$11.51	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	13,280.53	17	\$958.40	5%	6%	\$0.01	5	5	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,074.74	10	\$450.10	15%	36%	\$0.03	15	15	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	Existing	12,866.77	17	\$5,189.99	25%	44%	\$0.04	83	86	RSMMeans 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,945.28	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,907.33	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	3,747.62	10	\$474.46	8%	38%	\$0.02	10	10	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	Existing	3,785.62	15	\$578.02	8%	38%	\$0.02	10	10	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	Existing	1,978.73	3	\$164.47	8%	38%	\$0.03	5	5	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	6,133.70	12	\$1,606.13	8%	38%	\$0.03	16	16	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	Existing	4,981.28	3	\$1,814.60	5%	39%	\$0.07	57	59	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	Existing	4,601.35	3	\$1,296.14	0%	5%	\$0.01	8	8	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$1,106.63	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	Existing	1,527.83	10	\$6,001.52	15%	24%	\$0.04	5	5	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$682.25	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	New	4,509.05	3	\$1,814.60	5%	39%	\$0.07	24	24	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	New	15,039.52	10	\$457.54	15%	75%	\$0.00	28	28	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	15,890.13	15	\$6,650.60	15%	50%	\$0.04	17	17	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	3,788.08	15	\$1,285.31	15%	38%	\$0.04	3	3	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure- Drop Filters	per Facility	New	442.01	5	\$79.19	15%	50%	\$0.04	0	0	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	New	6,811.47	20	\$5,522.31	15%	50%	\$0.07	7	7	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	3,787.58	15	\$1,294.79	15%	38%	\$0.04	3	3	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	7,627.52	10	\$2,873.85	15%	50%	\$0.05	8	8	VT - TRM
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,538.14	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	New	5,950.37	15	\$3,045.77	8%	38%	\$0.05	5	5	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	New	3,638.03	3	\$324.88	8%	38%	\$0.03	3	3	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	9,802.20	15	\$4,872.55	8%	38%	\$0.05	9	9	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$676.84	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	25,938.66	10	\$2,270.79	8%	38%	\$0.01	24	24	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	New	8,815.09	15	\$662.62	8%	38%	\$0.01	8	8	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	New	4,360.25	3	\$188.16	8%	38%	\$0.01	4	4	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	New	12,954.51	10	\$1,695.48	8%	38%	\$0.02	12	12	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	654.32	8	\$1,062.63	10%	50%	\$0.25	4	4	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	464.35	8	\$377.00	5%	25%	\$0.13	1	1	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$1,063.99	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,944.24	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$11.51	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	12,272.59	17	\$958.40	5%	6%	\$0.01	2	2	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,870.63	10	\$450.10	15%	36%	\$0.03	6	6	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	New	11,953.52	17	\$3,114.13	25%	44%	\$0.03	35	35	RSMeans 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,945.28	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,907.33	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	3,715.17	10	\$474.46	8%	38%	\$0.02	3	3	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	New	3,783.91	15	\$578.02	8%	38%	\$0.02	4	4	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	New	1,908.23	3	\$164.47	8%	38%	\$0.03	2	2	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	New	5,885.67	12	\$1,606.13	8%	38%	\$0.03	5	5	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	New	4,280.49	3	\$986.15	0%	5%	\$0.01	3	3	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$1,106.63	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	New	363.53	32	\$16,508.06	15%	52%	\$0.32	2	2	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$682.25	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$221.33	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$23.01	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$108.97	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$129.95	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$15,550.33	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$83.25	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$4,007.55	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$444.68	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$4,073.21	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$51.44	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$58.88	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	Existing	0.00	10	\$347.89	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$11,922.49	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,470.77	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$25.04	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,786.54	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$11,048.69	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	Existing	296.23	5	\$80.54	15%	75%	\$0.07	2	2	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,954.40	10	\$1,615.61	15%	75%	\$0.08	15	16	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	Existing	772.81	5	\$1,070.76	15%	75%	\$0.33	20	20	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	757.61	15	\$372.26	15%	50%	\$0.06	2	2	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	Existing	1,494.39	18	\$894.10	15%	50%	\$0.06	5	5	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	Existing	524.59	3	\$49.41	15%	50%	\$0.04	2	2	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,558.27	15	\$745.20	15%	50%	\$0.06	5	5	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	Existing	312.14	3	\$1,814.60	5%	39%	\$0.07	23	5	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	Existing	1,145.38	3	\$1,296.14	0%	5%	\$0.01	3	3	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	Existing	395.42	10	\$6,001.52	15%	24%	\$0.04	2	2	6th Plan
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$221.33	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$23.01	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$108.97	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$129.95	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	New	393.30	3	\$1,814.60	5%	39%	\$0.07	7	3	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$15,550.33	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$83.25	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$4,007.55	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$444.68	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$4,073.21	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$51.44	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$58.88	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	New	0.00	10	\$347.89	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	New	0.00	10	\$11,922.49	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,470.77	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$25.04	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,786.54	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$11,048.69	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$80.54	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$1,615.61	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	New	742.47	5	\$1,070.76	15%	75%	\$0.34	6	6	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	777.98	15	\$372.26	15%	50%	\$0.06	1	1	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	New	1,477.81	18	\$894.10	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	New	524.59	3	\$49.41	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,529.60	15	\$745.20	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	New	1,107.58	3	\$986.15	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	New	101.60	32	\$16,508.06	15%	52%	\$0.32	0	0	6th Plan
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$54,576.77	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	Existing	1,074.35	3	\$1,296.14	0%	5%	\$0.01	0	1	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	Existing	370.75	10	\$6,001.52	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	393.52	15	\$84.60	15%	35%	\$0.02	1	1	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	13,646.83	20	\$15,154.76	100%	at stock turnover	\$0.11	13	13	BEST Simulation
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$35,454.09	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	New	344.66	3	\$986.15	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	New	32.47	32	\$16,508.06	15%	52%	\$0.32	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	126.24	15	\$35.20	15%	35%	\$0.03	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	New	7,296.21	20	\$9,100.37	100%	at stock turnover	\$0.13	2	2	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	7,117.13	23	\$14,827.17	2%	at stock turnover	\$0.16	2	2	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	3,901.23	23	\$2,241.91	6%	at stock turnover	\$0.06	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	1,248.23	10	\$347.06	15%	45%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	357.21	15	\$232.40	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	93.41	15	\$81.67	15%	75%	\$0.09	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	3,435.31	15	\$127,245.68	15%	50%	\$3.70	3	3	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	3,035.64	12	\$5,612.04	15%	50%	\$0.22	2	3	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	Existing	898.61	15	\$8,739.49	20%	50%	\$0.17	1	1	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	6,867.27	23	\$13,355.50	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	2,879.29	18	\$3,672.46	15%	75%	\$0.10	1	1	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	175.44	18	\$490.19	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	Existing	1,222.77	10	\$1,875.21	18%	30%	\$0.07	1	0	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	2,370.38	45	\$36,293.00	15%	25%	\$0.16	1	1	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	534.75	20	\$638.17	15%	25%	\$0.08	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	21.40	45	\$4,768.48	45%	50%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	Existing	5,573.45	23	\$15,213.01	4%	at stock turnover	\$0.28	1	1	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	Existing	813.49	3	\$1,157.79	0%	24%	\$0.04	0	1	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$180.00	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	Existing	279.24	10	\$1,136.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	6,371.95	23	\$3,392.11	3%	at stock turnover	\$0.06	2	2	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	1,793.88	10	\$518.33	15%	45%	\$0.04	0	0	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	2,525.63	4	\$330.08	15%	50%	\$0.03	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	499.60	15	\$334.29	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	90.56	15	\$82.80	15%	75%	\$0.09	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	5,118.62	23	\$10,397.00	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	279.46	23	\$18,451.16	6%	at stock turnover	\$6.87	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	1,524.46	10	\$421.46	15%	45%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	251.67	15	\$162.05	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,558.01	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	1,514.89	15	\$127,245.68	15%	50%	\$7.96	0	0	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	New	1,653.53	12	\$3,645.78	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	New	492.25	15	\$6,719.54	20%	50%	\$0.15	0	0	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	4,940.93	23	\$9,365.05	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	New	1,732.96	18	\$2,472.95	15%	75%	\$0.11	0	0	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	180.67	18	\$398.01	15%	25%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	New	656.28	10	\$1,122.05	18%	30%	\$0.08	0	0	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	-11.47	45	\$14,896.38	15%	25%	\$0.10	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	New	471.12	20	\$669.06	15%	25%	\$0.08	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-10.40	45	\$694.77	45%	50%	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	New	3,128.37	23	\$8,314.39	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	New	454.65	3	\$1,003.02	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$483.07	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	New	37.98	32	\$3,497.96	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	4,074.57	23	\$2,435.40	3%	at stock turnover	\$0.06	1	1	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	925.90	10	\$330.57	15%	45%	\$0.04	0	0	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	1,336.53	4	\$212.35	15%	50%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	187.19	15	\$154.29	15%	60%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$4,841.90	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	Existing	49.09	15	\$8,739.49	20%	50%	\$0.17	0	1	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	161.41	5	\$27.66	15%	25%	\$0.03	1	1	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	5.42	10	\$5.66	33%	60%	\$0.09	0	0	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	845.81	10	\$442.48	15%	30%	\$0.05	4	8	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	115.57	15	\$23.90	100%	at stock turnover	\$0.00	20	21	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	9.20	15	\$6.12	100%	at stock turnover	\$0.02	13	14	AEO 2013
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	8.03	15	\$3.70	100%	at stock turnover	\$0.03	13	26	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	46.22	3	\$1,157.79	0%	24%	\$0.04	0	1	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	15.87	10	\$1,136.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	New	38.23	15	\$6,719.54	20%	50%	\$0.15	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	129.28	5	\$27.49	15%	25%	\$0.03	0	0	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	4.41	10	\$3.40	44%	60%	\$0.06	0	0	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	675.79	10	\$440.54	15%	30%	\$0.06	1	2	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	115.57	15	\$23.90	100%	at stock turnover	\$0.00	8	9	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	9.20	15	\$6.12	100%	at stock turnover	\$0.02	5	5	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	8.03	15	\$3.70	100%	at stock turnover	\$0.03	5	10	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	New	36.91	3	\$1,003.02	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	3.10	32	\$3,497.96	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	1,524.41	23	\$13,063.88	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$5,612.04	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	Existing	4,354.53	15	\$8,739.49	20%	50%	\$0.17	4	4	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	713.33	23	\$10,096.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	Existing	741.40	18	\$3,672.46	15%	75%	\$0.10	0	0	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	619.62	18	\$490.19	15%	25%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	17,574.65	45	\$36,293.00	15%	25%	\$0.16	6	6	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	278.88	20	\$638.17	15%	25%	\$0.08	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	6,608.14	45	\$4,768.48	45%	50%	\$0.06	1	1	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	Existing	3,852.78	3	\$1,157.79	0%	24%	\$0.04	3	3	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$180.00	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	Existing	1,322.46	10	\$1,136.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	1,724.19	23	\$10,636.46	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$3,645.78	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	New	4,089.67	15	\$6,719.54	20%	50%	\$0.15	1	1	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	1,283.99	23	\$7,080.04	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	New	332.70	18	\$2,472.95	15%	75%	\$0.11	0	0	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	494.81	18	\$398.01	15%	25%	\$0.06	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	New	12,527.32	45	\$14,896.38	15%	25%	\$0.10	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	New	355.96	20	\$669.06	15%	25%	\$0.08	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	1,187.90	45	\$694.77	45%	50%	\$0.05	0	0	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	New	3,624.52	3	\$1,003.02	0%	24%	\$0.04	1	1	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$483.07	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	New	331.30	32	\$3,497.96	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	Existing	291.50	15	\$8,739.49	20%	50%	\$0.17	3	5	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	231.89	15	\$47.96	100%	at stock turnover	\$0.01	164	185	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	1,198.95	5	\$234.34	5%	40%	\$0.03	5	9	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	1,547.86	5	\$312.45	15%	50%	\$0.03	6	11	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	1,818.91	12	\$1,936.83	3%	25%	\$0.09	12	25	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	315.39	16	\$35.74	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	2,013.56	10	\$1,031.32	7%	60%	\$0.05	26	49	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$19,892.25	15%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	700.02	8	\$167.39	7%	15%	\$0.03	2	4	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	133.92	5	\$13.26	10%	25%	\$0.01	0	0	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	13.13	15	\$8.74	100%	at stock turnover	\$0.02	98	107	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	21.98	15	\$10.13	100%	at stock turnover	\$0.03	26	51	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	293.42	3	\$1,157.79	0%	24%	\$0.04	2	5	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	100.73	10	\$1,136.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	New	239.97	15	\$6,719.54	20%	50%	\$0.15	1	1	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	231.89	15	\$47.96	100%	at stock turnover	\$0.00	63	71	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	959.39	5	\$234.18	5%	40%	\$0.04	1	2	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	1,226.13	5	\$312.13	15%	50%	\$0.04	2	3	Illinois TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	1,512.35	12	\$1,820.87	4%	25%	\$0.09	4	6	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	262.05	16	\$35.58	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	1,659.11	10	\$984.75	22%	60%	\$0.05	5	7	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$19,892.25	18%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	581.49	8	\$163.02	7%	15%	\$0.03	1	1	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	108.61	5	\$13.26	10%	25%	\$0.01	0	0	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	13.13	15	\$8.74	100%	at stock turnover	\$0.02	38	42	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	21.98	15	\$10.13	100%	at stock turnover	\$0.03	10	19	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	New	241.62	3	\$1,003.02	0%	24%	\$0.04	1	1	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	19.45	32	\$3,497.96	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$53.85	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	Existing	1,091.86	3	\$860.06	10%	35%	\$0.05	9	9	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	954.89	3	\$1,157.79	0%	24%	\$0.04	8	8	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	327.76	10	\$1,136.45	15%	24%	\$0.05	1	1	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$53.85	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	New	1,092.54	3	\$860.06	10%	35%	\$0.06	3	3	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	New	954.89	3	\$1,003.02	0%	24%	\$0.04	3	3	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	88.68	32	\$3,497.96	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	8,495.07	10	\$258.60	15%	75%	\$0.00	88	88	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	9,180.54	15	\$3,756.40	15%	50%	\$0.04	53	57	OH - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,223.19	15	\$725.82	15%	38%	\$0.04	8	9	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	260.17	5	\$44.64	15%	50%	\$0.04	2	2	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	4,009.45	20	\$3,119.04	15%	50%	\$0.07	22	26	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,226.12	15	\$731.32	15%	38%	\$0.04	8	9	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	4,449.04	10	\$1,623.40	15%	50%	\$0.05	26	28	VT - TRM
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$808.63	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	Existing	3,591.63	15	\$1,720.27	8%	38%	\$0.05	18	20	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,124.03	3	\$183.56	8%	38%	\$0.03	11	11	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	5,663.70	15	\$2,752.41	8%	38%	\$0.05	28	31	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$215.58	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	10,376.98	10	\$899.03	8%	38%	\$0.01	53	54	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	Existing	3,494.07	15	\$262.16	8%	38%	\$0.01	18	18	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	Existing	1,789.41	3	\$74.56	8%	38%	\$0.01	9	9	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	5,339.83	10	\$671.16	8%	38%	\$0.02	26	28	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	597.41	8	\$822.70	10%	50%	\$0.21	15	17	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	423.86	8	\$291.75	5%	25%	\$0.11	5	6	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$338.98	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$887.71	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$3.40	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	10,745.80	17	\$742.16	5%	6%	\$0.01	7	7	E3T Website

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,704.42	10	\$348.68	15%	36%	\$0.03	23	26	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	10,588.34	17	\$4,018.23	25%	44%	\$0.04	130	139	RSMMeans 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,189.65	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$575.10	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$206.52	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$251.81	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$71.64	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$699.62	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	Existing	4,093.09	3	\$860.06	10%	35%	\$0.05	65	71	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	Existing	3,632.59	3	\$1,157.79	0%	24%	\$0.04	56	65	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$333.64	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	Existing	1,239.11	10	\$1,136.45	15%	24%	\$0.05	7	8	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	70,047.51	10	\$1,015.64	15%	75%	\$0.00	725	725	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	New	3,253.88	3	\$860.06	10%	35%	\$0.06	25	25	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	8,495.07	10	\$258.60	15%	75%	\$0.00	31	31	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	8,916.17	15	\$3,756.40	15%	50%	\$0.04	19	19	OH - TRM
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,126.97	15	\$725.82	15%	38%	\$0.04	3	3	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	250.11	5	\$44.64	15%	50%	\$0.04	1	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	3,784.22	20	\$3,119.04	15%	50%	\$0.07	8	8	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,159.60	15	\$731.32	15%	38%	\$0.04	3	3	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	4,280.00	10	\$1,623.40	15%	50%	\$0.05	9	9	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$808.63	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	New	3,338.98	15	\$1,720.27	8%	38%	\$0.05	6	6	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	New	2,058.52	3	\$183.56	8%	38%	\$0.03	4	4	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	5,500.32	15	\$2,752.41	8%	38%	\$0.05	10	10	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$215.58	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	10,287.12	10	\$899.03	8%	38%	\$0.01	19	19	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	New	3,492.49	15	\$262.16	8%	38%	\$0.01	6	6	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	New	1,729.24	3	\$74.56	8%	38%	\$0.01	3	3	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	5,137.65	10	\$671.16	8%	38%	\$0.02	9	9	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	472.38	8	\$822.70	10%	50%	\$0.25	6	6	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	335.23	8	\$291.75	5%	25%	\$0.13	2	2	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$338.98	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$887.71	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$3.40	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	8,749.01	17	\$742.16	5%	6%	\$0.01	3	3	E3T Website
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,346.31	10	\$348.68	15%	36%	\$0.03	9	9	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	New	8,595.63	17	\$2,411.00	25%	44%	\$0.03	50	50	RSMMeans 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,189.65	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$575.10	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	1,621.03	10	\$206.52	8%	38%	\$0.02	3	3	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	New	1,651.03	15	\$251.81	8%	38%	\$0.02	3	3	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	New	832.61	3	\$71.64	8%	38%	\$0.03	2	2	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	2,568.06	12	\$699.62	8%	38%	\$0.03	5	5	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	New	2,894.51	3	\$1,003.02	0%	24%	\$0.04	21	21	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$333.64	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	New	262.45	32	\$3,497.96	15%	52%	\$0.37	3	3	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	70,047.51	10	\$1,015.64	15%	75%	\$0.00	257	257	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$96.23	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$9.38	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$43.99	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$52.56	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,954.14	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$33.64	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,624.05	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$180.32	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,650.57	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$32.02	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$18.76	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$110.78	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,798.45	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$603.56	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$10.35	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,737.58	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$4,533.98	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	Existing	25.64	5	\$6.95	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	255.72	10	\$140.54	15%	75%	\$0.08	3	3	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	Existing	318.63	5	\$439.25	15%	75%	\$0.33	16	16	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	180.74	15	\$87.98	15%	50%	\$0.06	1	1	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	Existing	346.71	18	\$211.05	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	Existing	124.11	3	\$11.81	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	356.51	15	\$175.96	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	Existing	119.67	3	\$860.06	10%	35%	\$0.05	13	3	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	Existing	469.78	3	\$1,157.79	0%	24%	\$0.04	10	10	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	Existing	161.25	10	\$1,136.45	15%	24%	\$0.05	1	1	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$96.23	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$9.38	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$43.99	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$52.56	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	New	166.88	3	\$860.06	10%	35%	\$0.06	4	2	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,954.14	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$33.64	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,624.05	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$180.32	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,650.57	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$32.02	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$18.76	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Lamps	per Facility	New	0.00	10	\$110.78	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,798.45	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$603.56	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$10.35	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,737.58	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$4,533.98	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	New	25.54	5	\$6.95	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	254.16	10	\$140.54	15%	75%	\$0.08	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	New	373.08	5	\$439.25	15%	75%	\$0.28	5	5	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	182.51	15	\$87.98	15%	50%	\$0.06	0	0	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	New	339.72	18	\$211.05	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	New	124.11	3	\$11.81	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	358.84	15	\$175.96	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	New	553.54	3	\$1,003.02	0%	24%	\$0.04	3	3	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	New	50.25	32	\$3,497.96	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$5,612.04	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	Existing	110.33	3	\$1,157.79	0%	24%	\$0.04	0	1	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	37.87	10	\$1,136.45	15%	24%	\$0.05	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	40.54	15	\$8.73	15%	35%	\$0.02	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	1,403.29	20	\$1,558.35	100%	at stock turnover	\$0.11	3	3	BEST Simulation
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$3,645.78	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	New	35.35	3	\$1,003.02	0%	24%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	New	3.32	32	\$3,497.96	15%	52%	\$0.37	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	13.00	15	\$3.56	15%	35%	\$0.03	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	750.26	20	\$935.78	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	10,551.18	23	\$21,981.35	2%	at stock turnover	\$0.16	4	4	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	5,783.59	23	\$3,323.64	6%	at stock turnover	\$0.06	5	5	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	1,847.27	10	\$514.56	15%	45%	\$0.04	1	1	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	533.10	15	\$344.47	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	139.41	15	\$120.91	15%	75%	\$0.09	0	0	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	5,126.71	15	\$168,972.62	15%	50%	\$3.34	6	7	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	4,530.32	12	\$8,319.99	15%	50%	\$0.22	6	7	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	Existing	1,341.06	15	\$12,596.71	20%	50%	\$0.17	1	2	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	10,180.75	23	\$19,799.59	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	4,297.05	18	\$5,444.58	15%	75%	\$0.10	1	2	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	261.82	18	\$726.75	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	Existing	1,824.86	10	\$2,779.84	18%	30%	\$0.02	1	0	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	3,537.51	45	\$53,804.51	15%	25%	\$0.16	1	1	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	798.06	20	\$946.23	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	31.93	45	\$7,069.23	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	8,262.66	23	\$22,553.36	4%	at stock turnover	\$0.28	1	1	BEST Simulation
Metal Mfg	Cooling	Strategic Energy Management	per Facility	Existing	1,222.77	3	\$247.62	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$179.32	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	416.73	10	\$1,156.05	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	9,446.45	23	\$5,028.82	3%	at stock turnover	\$0.06	4	4	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	2,654.81	10	\$768.41	15%	45%	\$0.04	1	1	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	3,737.74	4	\$489.44	15%	50%	\$0.03	1	1	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	745.59	15	\$495.66	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	135.14	15	\$122.84	15%	75%	\$0.09	0	0	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,588.37	23	\$15,413.60	2%	at stock turnover	\$0.17	2	1	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	3,590.72	23	\$12,250.87	6%	at stock turnover	\$0.36	2	2	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,008.28	10	\$624.73	15%	45%	\$0.04	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	331.59	15	\$240.10	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,547.69	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	2,154.26	15	\$168,972.62	15%	50%	\$7.13	1	1	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	2,351.24	12	\$5,404.85	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	New	699.94	15	\$9,603.39	20%	50%	\$0.15	0	0	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,324.95	23	\$13,883.73	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	2,586.18	18	\$3,666.16	15%	75%	\$0.11	0	0	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	256.96	18	\$589.94	15%	25%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	New	923.58	10	\$1,663.31	18%	30%	\$0.03	0	0	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-16.32	45	\$22,083.91	15%	25%	\$0.10	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	670.32	20	\$991.97	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-14.79	45	\$1,030.20	45%	50%	\$0.05	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	New	4,637.82	23	\$12,326.12	4%	at stock turnover	\$0.28	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Strategic Energy Management	per Facility	New	646.31	3	\$200.37	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$481.06	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	New	54.01	32	\$3,352.18	15%	52%	\$0.34	0	0	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	6,040.57	23	\$3,610.48	3%	at stock turnover	\$0.06	1	1	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	1,381.75	10	\$490.08	15%	45%	\$0.04	0	0	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	1,977.98	4	\$314.84	15%	50%	\$0.04	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	279.35	15	\$228.72	15%	60%	\$0.07	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$4,822.42	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	45.48	15	\$12,596.71	20%	50%	\$0.17	1	1	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	148.33	5	\$25.56	15%	25%	\$0.03	1	1	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	5.03	10	\$5.15	33%	60%	\$0.09	0	0	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	783.70	10	\$407.40	15%	30%	\$0.05	6	12	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	106.39	15	\$22.00	100%	at stock turnover	\$0.00	27	30	AEO 2013
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	8.47	15	\$5.64	100%	at stock turnover	\$0.02	18	19	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	7.39	15	\$3.41	100%	at stock turnover	\$0.03	18	36	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	42.93	3	\$247.62	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	14.70	10	\$1,156.05	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	New	35.42	15	\$9,603.39	20%	50%	\$0.15	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	118.81	5	\$25.34	15%	25%	\$0.03	0	0	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	4.09	10	\$3.22	44%	60%	\$0.07	0	0	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	626.16	10	\$405.68	15%	30%	\$0.06	2	3	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	106.39	15	\$22.00	100%	at stock turnover	\$0.00	11	12	AEO 2013

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Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	8.47	15	\$5.64	100%	at stock turnover	\$0.02	7	8	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	7.39	15	\$3.41	100%	at stock turnover	\$0.03	7	13	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	34.38	3	\$200.37	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	2.87	32	\$3,352.18	15%	52%	\$0.34	0	0	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	2,259.95	23	\$19,367.25	2%	at stock turnover	\$0.16	1	1	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$8,319.99	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	Existing	6,498.86	15	\$12,596.71	20%	50%	\$0.17	10	10	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,057.51	23	\$14,968.57	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	1,106.49	18	\$5,444.58	15%	75%	\$0.10	0	0	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	924.74	18	\$726.75	15%	25%	\$0.07	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	26,229.14	45	\$53,804.51	15%	25%	\$0.16	13	13	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	416.21	20	\$946.23	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	9,862.27	45	\$7,069.23	45%	50%	\$0.06	2	2	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	Existing	5,711.77	3	\$247.62	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$179.32	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	1,973.69	10	\$1,156.05	15%	24%	\$0.05	1	1	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	2,556.12	23	\$15,768.60	2%	at stock turnover	\$0.17	1	0	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$5,404.85	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	New	6,103.57	15	\$9,603.39	20%	50%	\$0.15	3	3	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	1,903.52	23	\$10,496.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	New	496.53	18	\$3,666.16	15%	75%	\$0.11	0	0	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	738.47	18	\$589.94	15%	25%	\$0.06	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	18,696.31	45	\$22,083.91	15%	25%	\$0.10	3	3	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	531.25	20	\$991.97	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	1,772.87	45	\$1,030.20	45%	50%	\$0.05	0	0	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	New	5,373.36	3	\$200.37	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$481.06	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	New	494.44	32	\$3,352.18	15%	52%	\$0.34	0	0	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	Existing	270.09	15	\$12,596.71	20%	50%	\$0.17	4	6	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	213.47	15	\$44.15	100%	at stock turnover	\$0.01	228	257	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	1,101.81	5	\$215.62	5%	40%	\$0.03	6	12	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	1,422.45	5	\$287.56	15%	50%	\$0.03	8	16	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	1,685.34	12	\$1,782.93	3%	25%	\$0.09	17	36	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	289.83	16	\$32.86	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	1,865.78	10	\$949.45	7%	60%	\$0.05	36	68	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$26,415.39	15%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	643.30	8	\$154.20	7%	15%	\$0.03	3	5	CA - DEER
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	123.07	5	\$12.24	10%	25%	\$0.01	0	1	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	12.09	15	\$8.05	100%	at stock turnover	\$0.02	136	149	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	20.23	15	\$9.33	100%	at stock turnover	\$0.03	35	70	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	279.58	3	\$247.62	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	93.34	10	\$1,156.05	15%	24%	\$0.05	0	1	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	New	222.33	15	\$9,603.39	20%	50%	\$0.15	1	2	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	213.47	15	\$44.15	100%	at stock turnover	\$0.00	88	98	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	881.66	5	\$215.40	5%	40%	\$0.04	2	3	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	1,126.80	5	\$287.35	15%	50%	\$0.04	3	4	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	1,401.22	12	\$1,676.20	4%	25%	\$0.09	5	8	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	240.82	16	\$32.64	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	1,537.27	10	\$906.50	22%	60%	\$0.05	7	9	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$26,415.39	18%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	534.38	8	\$150.12	7%	15%	\$0.03	1	1	CA - DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	99.81	5	\$12.24	10%	25%	\$0.02	0	0	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	12.09	15	\$8.05	100%	at stock turnover	\$0.02	53	58	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	20.23	15	\$9.33	100%	at stock turnover	\$0.03	14	26	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	232.29	3	\$200.37	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	18.02	32	\$3,352.18	15%	52%	\$0.34	0	0	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$53.69	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	645.40	3	\$744.57	5%	39%	\$0.03	11	11	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	560.68	3	\$247.62	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	193.74	10	\$1,156.05	15%	24%	\$0.05	1	1	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$53.69	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	New	645.81	3	\$744.57	5%	39%	\$0.04	4	4	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	560.68	3	\$200.37	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	52.23	32	\$3,352.18	15%	52%	\$0.34	0	0	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	942.88	10	\$28.78	15%	75%	\$0.00	15	15	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	1,025.77	15	\$416.85	15%	50%	\$0.04	9	10	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	246.33	15	\$80.53	15%	38%	\$0.04	1	1	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	28.83	5	\$4.94	15%	50%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	450.38	20	\$346.19	15%	50%	\$0.07	4	4	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	246.65	15	\$81.18	15%	38%	\$0.04	1	1	MI - TRM
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	497.10	10	\$180.18	15%	50%	\$0.05	4	5	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$805.35	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	401.29	15	\$190.92	8%	38%	\$0.05	3	3	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	235.34	3	\$20.40	8%	38%	\$0.03	2	2	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	632.80	15	\$305.39	8%	38%	\$0.05	5	5	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$214.76	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	4,190.69	10	\$363.59	8%	38%	\$0.01	32	33	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	Existing	1,413.53	15	\$106.09	8%	38%	\$0.01	11	11	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	Existing	722.64	3	\$30.07	8%	38%	\$0.01	5	6	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	2,156.47	10	\$271.46	8%	38%	\$0.02	16	17	6th Plan
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	289.38	8	\$373.90	10%	50%	\$0.22	12	12	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	205.32	8	\$132.51	5%	25%	\$0.11	4	4	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$337.60	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$395.16	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.50	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	5,094.81	17	\$337.17	5%	6%	\$0.01	5	5	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	807.65	10	\$158.49	15%	36%	\$0.03	17	18	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	5,029.97	17	\$1,826.31	25%	44%	\$0.04	98	99	RSMears 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$529.38	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$255.99	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$121.34	8%	38%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$147.97	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$42.09	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$410.83	8%	38%	\$10.00	0	0	6th Plan

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Metal Mfg	Motors	Retrocommissioning	per Facility	Existing	1,981.45	3	\$744.57	5%	39%	\$0.03	69	70	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,763.17	3	\$247.62	0%	5%	\$0.01	9	9	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$148.40	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	596.35	10	\$1,156.05	15%	24%	\$0.05	6	6	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$541.84	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	New	1,676.39	3	\$744.57	5%	39%	\$0.04	26	26	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	942.88	10	\$28.78	15%	75%	\$0.00	5	5	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	996.21	15	\$416.85	15%	50%	\$0.04	3	3	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	237.49	15	\$80.53	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	27.71	5	\$4.94	15%	50%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	427.04	20	\$346.19	15%	50%	\$0.07	1	1	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	237.46	15	\$81.18	15%	38%	\$0.04	0	0	MI - TRM
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	478.20	10	\$180.18	15%	50%	\$0.05	2	2	VT - TRM
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$805.35	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	New	384.08	15	\$190.92	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	228.08	3	\$20.40	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	603.50	15	\$305.39	8%	38%	\$0.05	2	2	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$214.76	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	4,154.41	10	\$363.59	8%	38%	\$0.01	11	11	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	New	1,411.85	15	\$106.09	8%	38%	\$0.01	4	4	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	New	698.35	3	\$30.07	8%	38%	\$0.01	2	2	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	2,074.83	10	\$271.46	8%	38%	\$0.02	6	6	6th Plan

Measure Data and Assumptions

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Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	243.25	8	\$373.90	10%	50%	\$0.25	4	4	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	172.63	8	\$132.51	5%	25%	\$0.13	2	2	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$337.60	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$395.16	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.50	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,380.97	17	\$337.17	5%	6%	\$0.01	2	2	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	677.75	10	\$158.49	15%	36%	\$0.03	7	7	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,323.09	17	\$1,095.70	25%	44%	\$0.03	38	38	RSMMeans 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$529.38	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$255.99	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	950.15	10	\$121.34	8%	38%	\$0.02	3	3	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	New	967.73	15	\$147.97	8%	38%	\$0.02	3	3	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	New	488.03	3	\$42.09	8%	38%	\$0.03	1	1	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	1,505.25	12	\$410.83	8%	38%	\$0.03	4	4	6th Plan
Metal Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	New	1,524.37	3	\$200.37	0%	5%	\$0.01	4	4	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$148.40	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	New	135.15	32	\$3,352.18	15%	52%	\$0.34	2	2	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$541.84	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$56.48	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$27.70	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$130.36	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$155.49	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,934.09	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$99.65	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$4,808.46	0%	0%	\$10.00	0	0	6th Plan

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Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$533.89	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$4,887.06	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$48.54	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$18.68	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$110.39	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,782.99	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,101.72	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$18.90	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	28,487.90	10	\$2,634.88	15%	75%	\$0.01	444	444	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$8,276.18	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	Existing	136.53	5	\$36.94	15%	75%	\$0.07	2	2	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,351.35	10	\$738.99	15%	75%	\$0.08	21	21	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	Existing	537.41	5	\$801.91	15%	75%	\$0.33	38	42	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	332.57	15	\$158.92	15%	50%	\$0.06	3	3	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	Existing	637.87	18	\$381.63	15%	50%	\$0.06	6	6	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	223.92	3	\$21.26	15%	50%	\$0.04	2	2	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	655.95	15	\$318.06	15%	50%	\$0.06	6	6	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	Existing	202.89	3	\$744.57	5%	39%	\$0.03	42	9	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	Existing	857.97	3	\$247.62	0%	5%	\$0.01	6	6	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	Existing	273.43	10	\$1,156.05	15%	24%	\$0.05	3	3	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$56.48	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$27.70	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$130.36	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$155.49	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	New	262.24	3	\$744.57	5%	39%	\$0.04	13	6	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,934.09	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$99.65	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$4,808.46	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$533.89	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$4,887.06	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$48.54	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$18.68	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$110.39	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,782.99	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,101.72	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$18.90	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	New	28,487.90	10	\$2,634.88	15%	75%	\$0.01	157	157	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$8,276.18	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	New	136.62	5	\$36.94	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	1,340.91	10	\$738.99	15%	75%	\$0.08	7	7	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	New	577.87	5	\$801.91	15%	75%	\$0.28	13	13	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	320.82	15	\$158.92	15%	50%	\$0.06	1	1	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	New	630.79	18	\$381.63	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	New	223.92	3	\$21.26	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	664.16	15	\$318.06	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	New	1,011.71	3	\$200.37	0%	5%	\$0.01	2	2	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	New	77.84	32	\$3,352.18	15%	52%	\$0.34	1	1	6th Plan
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$8,319.99	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	163.78	3	\$247.62	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	56.52	10	\$1,156.05	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	59.99	15	\$12.89	15%	35%	\$0.02	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	2,080.39	20	\$2,310.26	100%	at stock turnover	\$0.11	6	6	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$5,404.85	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	New	52.54	3	\$200.37	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	4.95	32	\$3,352.18	15%	52%	\$0.34	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	19.25	15	\$5.37	15%	35%	\$0.03	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,112.27	20	\$1,387.30	100%	at stock turnover	\$0.13	1	1	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,818.04	23	\$10,037.46	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	2,640.99	23	\$1,517.69	6%	at stock turnover	\$0.06	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	845.00	10	\$235.01	15%	45%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	243.86	15	\$157.38	15%	60%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	63.77	15	\$55.30	15%	75%	\$0.09	0	0	BEST Simulation
Mining and Extraction	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	2,345.10	15	\$167,334.85	15%	50%	\$7.20	0	0	BEST Simulation
Mining and Extraction	Cooling	Destratification Fans (HVLS)	per Facility	Existing	2,072.31	12	\$3,799.06	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	Existing	613.44	15	\$5,867.99	20%	50%	\$0.17	0	0	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	4,648.89	23	\$9,041.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	Existing	1,965.61	18	\$2,486.20	15%	75%	\$0.10	0	0	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	119.77	18	\$331.78	15%	25%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	Existing	834.75	10	\$1,269.47	18%	30%	\$0.07	0	0	DEER
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	1,618.17	45	\$24,568.96	15%	25%	\$0.16	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	Existing	365.06	20	\$431.95	15%	25%	\$0.08	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	14.61	45	\$3,228.02	45%	50%	\$0.06	0	0	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	Existing	3,773.02	23	\$10,298.66	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$355.17	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	Existing	190.63	10	\$976.40	15%	24%	\$0.05	0	0	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	4,313.58	23	\$2,296.33	3%	at stock turnover	\$0.06	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	1,214.39	10	\$350.92	15%	45%	\$0.04	0	0	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	1,709.76	4	\$223.52	15%	50%	\$0.03	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	341.06	15	\$226.29	15%	60%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	61.82	15	\$56.15	15%	75%	\$0.09	0	0	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	3,465.12	23	\$7,038.39	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	189.18	23	\$326,219.54	6%	at stock turnover	\$179.49	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	1,040.74	10	\$285.20	15%	45%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	171.81	15	\$109.74	15%	60%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$5,045.99	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	1,034.11	15	\$167,334.85	15%	50%	\$15.46	0	0	BEST Simulation
Mining and Extraction	Cooling	Destratification Fans (HVLS)	per Facility	New	1,128.79	12	\$2,468.13	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	New	336.04	15	\$4,500.69	20%	50%	\$0.15	0	0	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	3,344.83	23	\$6,339.80	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	New	1,182.99	18	\$1,673.99	15%	75%	\$0.11	0	0	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	123.34	18	\$269.46	15%	25%	\$0.06	0	0	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	New	448.03	10	\$759.47	18%	30%	\$0.08	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	New	-7.83	45	\$10,084.33	15%	25%	\$0.10	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	New	321.62	20	\$453.00	15%	25%	\$0.08	0	0	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-7.10	45	\$470.44	45%	50%	\$0.05	0	0	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	New	2,117.79	23	\$5,628.54	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$952.80	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	New	25.93	32	\$3,086.17	15%	52%	\$0.37	0	0	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	2,758.34	23	\$1,648.67	3%	at stock turnover	\$0.06	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	632.05	10	\$223.74	15%	45%	\$0.04	0	0	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	904.78	4	\$143.77	15%	50%	\$0.04	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	127.78	15	\$104.42	15%	60%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$9,551.14	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	Existing	29.76	15	\$5,867.99	20%	50%	\$0.17	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	97.06	5	\$16.59	15%	25%	\$0.03	0	0	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	3.29	10	\$3.40	33%	60%	\$0.09	0	0	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	513.09	10	\$266.06	15%	30%	\$0.05	1	1	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	69.50	15	\$14.37	100%	at stock turnover	\$0.00	2	3	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	5.53	15	\$3.68	100%	at stock turnover	\$0.02	2	2	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	4.83	15	\$2.23	100%	at stock turnover	\$0.03	2	3	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	8.94	10	\$976.40	15%	24%	\$0.05	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	New	23.18	15	\$4,500.69	20%	50%	\$0.15	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	77.74	5	\$16.59	15%	25%	\$0.03	0	0	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	2.67	10	\$2.13	44%	60%	\$0.06	0	0	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	409.73	10	\$265.00	15%	30%	\$0.06	0	0	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	69.50	15	\$14.37	100%	at stock turnover	\$0.00	1	1	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	5.53	15	\$3.68	100%	at stock turnover	\$0.02	1	1	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	4.83	15	\$2.23	100%	at stock turnover	\$0.03	1	1	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	New	1.88	32	\$3,086.17	15%	52%	\$0.37	0	0	6th Plan
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	1,031.97	23	\$8,843.77	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$3,799.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Heating	Energy Management System	per Facility	Existing	2,972.81	15	\$5,867.99	20%	50%	\$0.17	1	1	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	482.90	23	\$6,835.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	Existing	506.15	18	\$2,486.20	15%	75%	\$0.10	0	0	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	423.01	18	\$331.78	15%	25%	\$0.07	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	Existing	11,998.13	45	\$24,568.96	15%	25%	\$0.16	1	1	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	Existing	190.39	20	\$431.95	15%	25%	\$0.08	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	4,511.35	45	\$3,228.02	45%	50%	\$0.06	0	0	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$355.17	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	Existing	902.84	10	\$976.40	15%	24%	\$0.05	0	0	6th Plan
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	1,167.21	23	\$7,200.50	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$2,468.13	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Heating	Energy Management System	per Facility	New	2,791.99	15	\$4,500.69	20%	50%	\$0.15	0	0	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	869.21	23	\$4,792.93	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	New	227.13	18	\$1,673.99	15%	75%	\$0.11	0	0	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	337.80	18	\$269.46	15%	25%	\$0.06	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	New	8,552.35	45	\$10,084.33	15%	25%	\$0.10	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	New	243.01	20	\$453.00	15%	25%	\$0.08	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	New	810.97	45	\$470.44	45%	50%	\$0.05	0	0	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$952.80	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	New	226.17	32	\$3,086.17	15%	52%	\$0.37	0	0	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	Existing	176.74	15	\$5,867.99	20%	50%	\$0.17	0	1	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	139.45	15	\$28.84	100%	at stock turnover	\$0.01	20	23	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	690.47	5	\$141.01	5%	40%	\$0.03	1	1	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	961.32	5	\$187.79	15%	50%	\$0.03	1	1	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	1,102.82	12	\$1,164.62	3%	25%	\$0.09	2	3	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	189.66	16	\$21.48	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	1,220.91	10	\$620.17	7%	60%	\$0.05	3	6	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$26,159.36	15%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	420.96	8	\$100.60	7%	15%	\$0.03	0	0	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	80.53	5	\$8.08	10%	25%	\$0.01	0	0	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	7.89	15	\$5.26	100%	at stock turnover	\$0.02	12	13	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	13.22	15	\$6.09	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	61.08	10	\$976.40	15%	24%	\$0.05	0	0	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	New	145.48	15	\$4,500.69	20%	50%	\$0.15	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	139.45	15	\$28.84	100%	at stock turnover	\$0.00	8	9	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	545.02	5	\$140.79	5%	40%	\$0.04	0	0	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	769.24	5	\$187.79	15%	50%	\$0.04	0	0	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	916.89	12	\$1,095.08	4%	25%	\$0.09	0	1	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	157.58	16	\$21.27	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	1,005.93	10	\$592.09	22%	60%	\$0.05	1	1	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$26,159.36	18%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	349.68	8	\$98.04	7%	15%	\$0.03	0	0	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	65.31	5	\$7.87	10%	25%	\$0.01	0	0	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	7.89	15	\$5.26	100%	at stock turnover	\$0.02	5	5	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	13.22	15	\$6.09	100%	at stock turnover	\$0.03	1	2	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	New	11.79	32	\$3,086.17	15%	52%	\$0.37	0	0	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$106.34	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	Existing	227.49	3	\$1,073.60	10%	40%	\$0.08	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	68.29	10	\$976.40	15%	24%	\$0.05	0	0	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$106.34	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	New	227.63	3	\$1,073.60	10%	40%	\$0.07	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

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Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	New	18.44	32	\$3,086.17	15%	52%	\$0.37	0	0	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	9,731.28	10	\$296.26	15%	75%	\$0.00	21	21	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	10,716.83	15	\$4,303.11	15%	50%	\$0.04	13	14	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,546.71	15	\$831.57	15%	38%	\$0.04	2	2	MI - TRM
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	298.03	5	\$51.04	15%	50%	\$0.04	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	4,656.34	20	\$3,572.99	15%	50%	\$0.07	5	6	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,550.06	15	\$837.74	15%	38%	\$0.04	2	2	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	5,196.16	10	\$1,859.65	15%	50%	\$0.05	6	7	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,595.08	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	Existing	4,151.39	15	\$1,970.67	8%	38%	\$0.05	4	5	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,439.81	3	\$210.13	8%	38%	\$0.03	3	3	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	6,546.33	15	\$3,152.95	8%	38%	\$0.05	7	7	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$425.36	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	9,628.21	10	\$834.12	8%	38%	\$0.01	10	10	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	Existing	3,241.95	15	\$243.30	8%	38%	\$0.01	3	3	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	Existing	1,660.29	3	\$69.12	8%	38%	\$0.01	2	2	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	4,954.53	10	\$622.72	8%	38%	\$0.02	5	5	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	593.00	8	\$917.07	10%	50%	\$0.25	4	4	Developed from RTF

Measure Data and Assumptions

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Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	420.74	8	\$325.18	5%	25%	\$0.13	1	2	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$668.87	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$5,164.67	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$19.78	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	10,716.37	17	\$827.10	5%	6%	\$0.01	2	2	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,685.72	10	\$388.56	15%	36%	\$0.03	6	6	6th Plan
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	Existing	10,333.38	17	\$4,478.99	25%	44%	\$0.05	34	35	RSMMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$6,920.96	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$3,345.63	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	11,553.85	10	\$1,459.61	8%	38%	\$0.02	12	12	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	Existing	11,671.02	15	\$1,779.69	8%	38%	\$0.02	13	13	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	Existing	6,100.38	3	\$506.17	8%	38%	\$0.03	6	7	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	18,910.05	12	\$4,943.48	8%	38%	\$0.03	20	20	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	Existing	4,056.57	3	\$1,073.60	10%	40%	\$0.08	21	22	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$1,941.32	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	Existing	1,220.84	10	\$976.40	15%	24%	\$0.05	2	2	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$190.98	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	New	5,091.62	3	\$1,073.60	10%	40%	\$0.07	6	6	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$296.26	15%	75%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$4,303.11	15%	50%	\$10.00	0	0	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$831.57	15%	38%	\$10.00	0	0	MI - TRM

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Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$51.04	15%	50%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$3,572.99	15%	50%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$837.74	15%	38%	\$10.00	0	0	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$1,859.65	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,595.08	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$1,970.67	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$210.13	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$3,152.95	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$425.36	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$834.12	8%	38%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	New	0.00	15	\$243.30	8%	38%	\$10.00	0	0	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$69.12	8%	38%	\$10.00	0	0	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$622.72	8%	38%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	740.03	8	\$917.07	10%	50%	\$0.20	1	1	Developed from RTF
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	525.18	8	\$325.18	5%	25%	\$0.10	0	0	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$668.87	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$5,164.67	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$19.78	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	13,515.66	17	\$827.10	5%	6%	\$0.01	1	1	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,082.33	10	\$388.56	15%	36%	\$0.03	2	2	6th Plan

Measure Data and Assumptions

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Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	New	13,268.78	17	\$2,687.40	25%	44%	\$0.02	10	10	RSMMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$6,920.96	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$3,345.63	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	11,453.80	10	\$1,459.61	8%	38%	\$0.02	4	4	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	New	11,665.74	15	\$1,779.69	8%	38%	\$0.02	4	4	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	New	5,863.13	3	\$506.17	8%	38%	\$0.03	2	2	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	New	18,145.30	12	\$4,943.48	8%	38%	\$0.03	7	7	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$1,941.32	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	New	411.15	32	\$3,086.17	15%	52%	\$0.37	1	1	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$190.98	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$680.36	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$11.91	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$55.51	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$66.36	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$9,772.54	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$42.54	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,050.21	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$227.57	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,083.60	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$3.40	0%	0%	\$10.00	0	0	MT - IRP 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$37.22	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	Existing	0.00	10	\$218.63	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$7,492.64	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$481.29	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$8.29	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$189.07	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$3,615.73	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	Existing	250.24	5	\$67.63	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,478.99	10	\$1,352.21	15%	75%	\$0.08	5	5	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	Existing	331.67	5	\$350.28	15%	75%	\$0.25	2	2	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$129.10	15%	50%	\$10.00	0	0	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$309.66	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$17.23	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$258.19	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	Existing	189.20	3	\$1,073.60	10%	40%	\$0.08	2	1	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	Existing	170.72	10	\$976.40	15%	24%	\$0.05	0	0	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$680.36	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$11.91	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$55.51	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$66.36	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	New	102.78	3	\$1,073.60	10%	40%	\$0.07	1	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$9,772.54	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$42.54	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,050.21	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$227.57	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,083.60	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$3.40	0%	0%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$37.22	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	New	0.00	10	\$218.63	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	New	0.00	10	\$7,492.64	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$481.29	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$8.29	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$189.07	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$3,615.73	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	New	250.40	5	\$67.63	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,461.65	10	\$1,352.21	15%	75%	\$0.08	2	2	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	New	245.36	5	\$350.28	15%	75%	\$0.33	1	1	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	270.07	15	\$129.10	15%	50%	\$0.06	0	0	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	New	513.01	18	\$309.66	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	New	182.11	3	\$17.23	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	530.99	15	\$258.19	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	New	33.05	32	\$3,086.17	15%	52%	\$0.37	0	0	6th Plan
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$3,799.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	Existing	25.85	10	\$976.40	15%	24%	\$0.05	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	27.44	15	\$5.95	15%	35%	\$0.02	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	949.98	20	\$1,054.95	100%	at stock turnover	\$0.11	0	0	BEST Simulation
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$2,468.13	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	New	2.26	32	\$3,086.17	15%	52%	\$0.37	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	8.80	15	\$2.55	15%	35%	\$0.03	0	0	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	New	507.90	20	\$633.49	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	515,601.97	23	\$1,074,157.03	2%	at stock turnover	\$0.16	82	79	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	282,625.28	23	\$162,415.60	6%	at stock turnover	\$0.06	108	109	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	90,270.21	10	\$25,148.46	15%	45%	\$0.04	17	18	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	26,051.04	15	\$16,832.35	15%	60%	\$0.07	7	8	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	6,812.27	15	\$5,911.04	15%	75%	\$0.09	2	3	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	262,133.04	15	\$419,861.48	15%	50%	\$0.17	146	164	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	214,761.39	12	\$406,566.58	15%	50%	\$0.22	115	145	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	Existing	63,569.23	15	\$607,719.61	20%	50%	\$0.18	29	34	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	497,500.21	23	\$967,541.61	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	209,982.81	18	\$266,053.86	15%	75%	\$0.10	30	36	AEG research & analysis
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	12,794.39	18	\$35,511.06	15%	25%	\$0.07	2	2	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	Existing	89,174.75	10	\$135,845.04	18%	30%	\$0.02	26	10	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	172,866.61	45	\$2,629,251.79	15%	25%	\$0.16	28	31	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	38,998.66	20	\$46,234.92	15%	25%	\$0.08	6	7	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	1,560.52	45	\$345,452.40	45%	50%	\$0.06	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	403,769.43	23	\$1,102,109.07	4%	at stock turnover	\$0.28	27	27	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	Existing	59,752.55	3	\$9,348.70	0%	5%	\$0.01	5	6	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$891.17	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	20,364.45	10	\$43,228.44	15%	24%	\$0.04	3	3	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	461,617.29	23	\$245,741.86	3%	at stock turnover	\$0.06	90	90	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	129,731.83	10	\$37,548.47	15%	45%	\$0.04	11	14	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	182,651.37	4	\$23,912.04	15%	50%	\$0.03	19	23	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	36,434.70	15	\$24,221.55	15%	60%	\$0.07	5	6	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	6,604.02	15	\$6,001.76	15%	75%	\$0.09	1	1	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	370,819.12	23	\$753,212.68	2%	at stock turnover	\$0.17	34	32	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	175,466.79	23	\$24,214.82	6%	at stock turnover	\$0.01	38	38	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	98,137.98	10	\$30,531.21	15%	45%	\$0.04	7	7	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	16,203.81	15	\$11,734.03	15%	60%	\$0.07	2	2	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$12,660.95	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	105,271.73	15	\$419,861.48	15%	50%	\$0.36	22	23	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	114,897.29	12	\$264,115.18	15%	50%	\$0.25	24	25	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	New	34,203.81	15	\$461,483.69	20%	50%	\$0.15	6	6	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	357,946.62	23	\$678,452.58	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	126,378.08	18	\$179,150.86	15%	75%	\$0.11	7	7	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	12,556.83	18	\$28,829.46	15%	25%	\$0.06	1	1	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	New	45,132.47	10	\$81,285.46	18%	30%	\$0.03	7	4	DEER
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-797.68	45	\$1,079,170.48	15%	25%	\$0.10	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	32,756.47	20	\$48,472.98	15%	25%	\$0.08	2	2	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-722.70	45	\$50,338.55	45%	50%	\$0.05	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	New	226,634.94	23	\$602,337.44	4%	at stock turnover	\$0.28	9	9	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	New	31,583.25	3	\$7,039.67	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$2,390.67	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	New	2,639.23	32	\$117,838.17	15%	52%	\$0.32	1	1	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	295,183.17	23	\$176,432.65	3%	at stock turnover	\$0.06	32	32	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	67,521.81	10	\$23,948.86	15%	45%	\$0.04	2	2	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	96,657.29	4	\$15,381.40	15%	50%	\$0.04	4	4	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	13,651.02	15	\$11,176.38	15%	60%	\$0.07	1	1	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$23,964.87	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	1,617.79	15	\$607,719.61	20%	50%	\$0.18	10	17	BEST Simulation
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	5,276.00	5	\$905.57	15%	25%	\$0.03	11	23	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	178.78	10	\$183.04	33%	60%	\$0.09	1	2	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	27,875.12	10	\$14,489.17	15%	30%	\$0.05	90	185	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	3,784.25	15	\$782.66	100%	at stock turnover	\$0.00	440	476	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	301.11	15	\$200.44	100%	at stock turnover	\$0.02	282	309	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	262.99	15	\$121.26	100%	at stock turnover	\$0.03	287	571	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	1,526.78	3	\$9,348.70	0%	5%	\$0.01	2	4	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	522.93	10	\$43,228.44	15%	24%	\$0.04	1	2	6th Plan
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	New	1,259.80	15	\$461,483.69	20%	50%	\$0.15	3	5	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	4,225.78	5	\$901.84	15%	25%	\$0.03	4	5	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	145.30	10	\$112.06	44%	60%	\$0.07	0	0	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	22,271.61	10	\$14,426.20	15%	30%	\$0.06	29	41	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	3,784.25	15	\$782.66	100%	at stock turnover	\$0.00	171	190	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	301.11	15	\$200.44	100%	at stock turnover	\$0.02	110	121	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	262.99	15	\$121.26	100%	at stock turnover	\$0.03	111	212	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	1,222.87	3	\$7,039.67	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	102.10	32	\$117,838.17	15%	52%	\$0.32	0	0	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	110,436.30	23	\$946,414.69	2%	at stock turnover	\$0.16	17	17	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$406,566.58	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	Existing	317,578.30	15	\$607,719.61	20%	50%	\$0.18	214	217	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	51,677.07	23	\$731,465.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	54,070.63	18	\$266,053.86	15%	75%	\$0.10	9	9	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	45,189.17	18	\$35,511.06	15%	25%	\$0.07	10	10	BEST Simulation
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	1,281,732.79	45	\$2,629,251.79	15%	25%	\$0.16	290	291	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	20,338.92	20	\$46,234.92	15%	25%	\$0.08	5	5	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	481,937.18	45	\$345,452.40	45%	50%	\$0.06	55	55	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	Existing	279,115.57	3	\$9,348.70	0%	5%	\$0.01	32	32	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$891.17	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	96,447.91	10	\$43,228.44	15%	24%	\$0.04	21	21	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	124,909.31	23	\$770,560.31	2%	at stock turnover	\$0.17	11	11	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$264,115.18	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	New	298,261.81	15	\$461,483.69	20%	50%	\$0.15	72	72	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	93,018.73	23	\$512,914.88	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	New	24,263.59	18	\$179,150.86	15%	75%	\$0.11	1	1	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	36,086.80	18	\$28,829.46	15%	25%	\$0.06	3	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	913,627.65	45	\$1,079,170.48	15%	25%	\$0.10	74	74	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	25,960.57	20	\$48,472.98	15%	25%	\$0.08	2	2	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	86,634.53	45	\$50,338.55	45%	50%	\$0.05	3	3	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	New	262,578.62	3	\$7,039.67	0%	5%	\$0.01	11	11	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$2,390.67	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	New	24,161.48	32	\$117,838.17	15%	52%	\$0.32	7	7	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	Existing	9,606.82	15	\$607,719.61	20%	50%	\$0.18	61	101	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	7,592.74	15	\$1,570.33	100%	at stock turnover	\$0.01	3,656	4,119	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	39,189.64	5	\$7,672.56	5%	40%	\$0.03	104	195	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	50,594.37	5	\$10,230.25	15%	50%	\$0.03	132	253	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	59,945.14	12	\$63,416.80	3%	25%	\$0.09	279	571	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	10,308.85	16	\$1,167.59	1%	3%	\$0.01	5	9	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	66,362.97	10	\$33,768.75	7%	60%	\$0.05	573	1,087	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$65,636.71	15%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	22,881.34	8	\$5,480.93	7%	15%	\$0.03	44	82	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	4,377.52	5	\$434.91	10%	25%	\$0.01	4	10	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	429.87	15	\$286.16	100%	at stock turnover	\$0.02	2,185	2,390	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	719.71	15	\$331.84	100%	at stock turnover	\$0.03	568	1,129	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	9,944.13	3	\$9,348.70	0%	5%	\$0.01	11	23	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	3,319.96	10	\$43,228.44	15%	24%	\$0.04	7	11	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	New	7,907.97	15	\$461,483.69	20%	50%	\$0.15	20	29	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	7,592.74	15	\$1,570.33	100%	at stock turnover	\$0.00	1,413	1,572	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	31,359.45	5	\$7,665.09	5%	40%	\$0.04	33	45	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	40,078.45	5	\$10,220.12	15%	50%	\$0.04	42	57	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	49,839.27	12	\$59,621.08	4%	25%	\$0.09	88	124	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	8,565.48	16	\$1,162.78	1%	3%	\$0.01	1	2	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	54,678.33	10	\$32,242.03	22%	60%	\$0.05	107	150	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$65,636.71	18%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	19,007.13	8	\$5,335.78	7%	15%	\$0.03	14	19	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	3,550.11	5	\$432.24	10%	25%	\$0.02	1	2	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	429.87	15	\$286.16	100%	at stock turnover	\$0.02	853	936	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	719.71	15	\$331.84	100%	at stock turnover	\$0.03	219	419	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	8,262.36	3	\$7,039.67	0%	5%	\$0.01	4	5	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	640.90	32	\$117,838.17	15%	52%	\$0.32	2	3	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$266.82	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	22,075.55	3	\$10,895.16	5%	39%	\$0.03	171	171	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	19,177.70	3	\$9,348.70	0%	5%	\$0.01	22	22	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	6,626.82	10	\$43,228.44	15%	24%	\$0.04	14	14	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$266.82	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	New	22,089.41	3	\$10,895.16	5%	39%	\$0.03	56	56	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	19,177.70	3	\$7,039.67	0%	5%	\$0.01	7	7	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	1,786.47	32	\$117,838.17	15%	52%	\$0.32	5	5	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	63,183.47	10	\$1,923.21	15%	75%	\$0.00	444	444	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	69,418.41	15	\$27,938.83	15%	50%	\$0.04	277	292	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	16,506.50	15	\$5,399.29	15%	38%	\$0.04	43	44	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,931.68	5	\$331.92	15%	50%	\$0.04	8	8	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	30,180.40	20	\$23,198.57	15%	50%	\$0.07	116	132	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	16,528.25	15	\$5,439.84	15%	38%	\$0.04	43	45	MI - TRM
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	33,658.49	10	\$12,074.49	15%	50%	\$0.05	133	144	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$4,002.24	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	26,891.10	15	\$12,794.89	8%	38%	\$0.05	89	99	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	15,813.62	3	\$1,365.03	8%	38%	\$0.03	55	57	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	42,404.76	15	\$20,471.18	8%	38%	\$0.05	140	157	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,067.26	15%	50%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	115,766.54	10	\$10,046.69	8%	38%	\$0.01	403	407	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	Existing	39,001.89	15	\$2,930.17	8%	38%	\$0.01	137	137	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	Existing	19,962.84	3	\$833.53	8%	38%	\$0.01	68	70	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	59,571.88	10	\$7,501.26	8%	38%	\$0.02	201	210	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	3,097.44	8	\$4,837.91	10%	50%	\$0.25	69	74	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	2,197.67	8	\$1,715.09	5%	25%	\$0.13	25	26	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$1,678.27	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$626.48	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$2.13	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	56,191.78	17	\$4,364.04	5%	6%	\$0.01	33	33	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	8,825.97	10	\$2,050.21	15%	36%	\$0.03	106	110	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	54,085.51	17	\$23,630.28	25%	44%	\$0.05	585	602	RSMMeans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$839.40	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$405.56	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	32,132.18	10	\$4,066.81	8%	38%	\$0.02	112	113	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	Existing	32,458.00	15	\$4,957.97	8%	38%	\$0.02	114	114	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	16,965.67	3	\$1,410.39	8%	38%	\$0.03	59	60	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	52,590.44	12	\$13,772.50	8%	38%	\$0.03	180	185	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	Existing	21,207.32	3	\$10,895.16	5%	39%	\$0.03	405	423	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	Existing	19,559.27	3	\$9,348.70	0%	5%	\$0.01	57	58	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$235.33	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	6,564.49	10	\$43,228.44	15%	24%	\$0.04	35	36	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$3,746.10	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	New	20,474.08	3	\$10,895.16	5%	39%	\$0.03	144	144	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	63,183.47	10	\$1,923.21	15%	75%	\$0.00	157	157	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	66,757.02	15	\$27,938.83	15%	50%	\$0.04	96	96	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	15,792.15	15	\$5,399.29	15%	38%	\$0.04	15	15	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,856.97	5	\$331.92	15%	50%	\$0.04	3	3	MI - TRM
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	28,616.12	20	\$23,198.57	15%	50%	\$0.07	41	41	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	16,034.45	15	\$5,439.84	15%	38%	\$0.04	15	15	MI - TRM
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	32,044.48	10	\$12,074.49	15%	50%	\$0.05	46	46	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$4,002.24	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	New	25,737.90	15	\$12,794.89	8%	38%	\$0.05	32	32	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	15,283.95	3	\$1,365.03	8%	38%	\$0.03	19	19	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	40,441.20	15	\$20,471.18	8%	38%	\$0.05	50	50	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,067.26	15%	50%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	114,764.17	10	\$10,046.69	8%	38%	\$0.01	143	143	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	New	39,001.89	15	\$2,930.17	8%	38%	\$0.01	49	49	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	New	19,291.68	3	\$833.53	8%	38%	\$0.01	24	24	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	57,316.54	10	\$7,501.26	8%	38%	\$0.02	71	71	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	2,971.03	8	\$4,837.91	10%	50%	\$0.25	25	25	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2,108.45	8	\$1,715.09	5%	25%	\$0.13	9	9	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$1,678.27	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$626.48	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$2.13	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	55,945.41	17	\$4,364.04	5%	6%	\$0.01	12	12	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	8,498.13	10	\$2,050.21	15%	36%	\$0.03	37	37	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	54,343.71	17	\$14,178.06	25%	44%	\$0.03	214	214	RSMMeans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$839.40	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$405.56	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	31,853.97	10	\$4,066.81	8%	38%	\$0.02	40	40	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	New	32,443.34	15	\$4,957.97	8%	38%	\$0.02	40	40	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	New	16,361.22	3	\$1,410.39	8%	38%	\$0.03	20	20	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	50,463.81	12	\$13,772.50	8%	38%	\$0.03	63	63	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	New	19,510.40	3	\$7,039.67	0%	5%	\$0.01	20	20	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$235.33	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	New	1,650.67	32	\$117,838.17	15%	52%	\$0.32	13	13	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$3,746.10	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,895.46	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$192.11	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$905.57	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$1,080.07	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$24,520.38	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$692.12	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$33,382.94	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$3,706.61	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$33,927.77	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$560.85	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$93.39	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$548.57	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$18,799.85	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$14,167.92	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$242.27	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$30,474.11	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$106,440.33	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	Existing	802.60	5	\$217.19	15%	75%	\$0.07	6	6	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	7,943.82	10	\$4,344.30	15%	75%	\$0.08	55	56	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	Existing	7,445.91	5	\$10,312.97	15%	75%	\$0.33	258	262	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	11,420.84	15	\$5,459.59	15%	50%	\$0.06	47	47	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	Existing	21,905.31	18	\$13,102.79	15%	50%	\$0.06	88	91	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	7,689.57	3	\$727.87	15%	50%	\$0.04	32	32	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	22,526.20	15	\$10,919.17	15%	50%	\$0.06	92	93	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	Existing	3,250.08	3	\$10,895.16	5%	39%	\$0.03	322	65	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	Existing	11,034.50	3	\$9,348.70	0%	5%	\$0.01	32	32	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	Existing	3,807.63	10	\$43,228.44	15%	24%	\$0.04	21	21	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,895.46	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$192.11	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$905.57	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$1,080.07	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Commissioning	per Facility	New	3,238.86	3	\$10,895.16	5%	39%	\$0.03	114	48	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$24,520.38	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$692.12	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$33,382.94	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$3,706.61	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$33,927.77	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$560.85	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$93.39	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$548.57	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$18,799.85	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$14,167.92	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$242.27	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$30,474.11	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$106,440.33	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	New	803.10	5	\$217.19	15%	75%	\$0.07	2	2	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	7,882.42	10	\$4,344.30	15%	75%	\$0.08	20	20	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	New	7,351.49	5	\$10,312.97	15%	75%	\$0.33	91	91	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	11,017.47	15	\$5,459.59	15%	50%	\$0.06	16	16	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	New	21,662.23	18	\$13,102.79	15%	50%	\$0.06	31	31	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	New	7,689.57	3	\$727.87	15%	50%	\$0.04	11	11	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	22,807.95	15	\$10,919.17	15%	50%	\$0.06	33	33	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	New	11,034.50	3	\$7,039.67	0%	5%	\$0.01	11	11	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	New	1,005.94	32	\$117,838.17	15%	52%	\$0.32	8	8	6th Plan
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$406,566.58	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	8,003.33	3	\$9,348.70	0%	5%	\$0.01	4	5	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	2,761.90	10	\$43,228.44	15%	24%	\$0.04	3	3	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	2,931.52	15	\$632.35	15%	35%	\$0.02	6	7	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	101,661.72	20	\$112,895.03	100%	at stock turnover	\$0.11	134	134	BEST Simulation
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$264,115.18	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	New	2,567.53	3	\$7,039.67	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	241.88	32	\$117,838.17	15%	52%	\$0.32	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	940.44	15	\$262.55	15%	35%	\$0.03	1	1	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	54,352.96	20	\$67,793.02	100%	at stock turnover	\$0.13	18	18	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	18,665,369.17	23	\$38,885,688.57	2%	at stock turnover	\$0.16	63	61	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	10,231,351.82	23	\$5,879,626.77	6%	at stock turnover	\$0.06	83	84	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	3,273,593.12	10	\$910,412.09	15%	45%	\$0.04	13	14	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	936,823.63	15	\$609,361.65	15%	60%	\$0.07	5	6	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	244,977.26	15	\$213,989.08	15%	75%	\$0.09	2	2	BEST Simulation
Paper Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	9,480,029.97	15	\$13,347,598.77	15%	50%	\$0.15	113	126	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	7,723,258.82	12	\$14,718,153.56	15%	50%	\$0.22	88	111	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	Existing	2,286,074.45	15	\$22,309,710.63	20%	50%	\$0.17	22	26	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	18,010,065.24	23	\$35,026,090.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	7,551,213.24	18	\$9,631,442.70	15%	75%	\$0.10	23	28	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	460,101.18	18	\$1,285,546.12	15%	25%	\$0.07	2	2	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	Existing	3,206,832.77	10	\$4,917,745.32	18%	30%	\$0.07	20	8	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	6,029,954.42	45	\$95,181,865.96	15%	25%	\$0.16	20	23	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	1,402,445.36	20	\$1,673,759.71	15%	25%	\$0.08	5	5	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	56,118.24	45	\$12,505,773.79	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	14,616,905.81	23	\$39,897,583.81	4%	at stock turnover	\$0.28	21	21	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	Existing	2,133,449.58	3	\$3,051,185.08	0%	24%	\$0.04	18	21	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,833.06	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	732,329.33	10	\$2,998,086.47	15%	24%	\$0.05	2	3	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	16,711,063.30	23	\$8,896,130.94	3%	at stock turnover	\$0.06	69	69	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	4,704,613.58	10	\$1,359,307.38	15%	45%	\$0.04	9	11	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	6,623,712.90	4	\$865,643.01	15%	50%	\$0.03	15	17	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,310,260.49	15	\$876,839.52	15%	60%	\$0.07	4	5	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	237,495.15	15	\$217,263.21	15%	75%	\$0.09	1	1	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	13,424,067.92	23	\$27,267,143.41	2%	at stock turnover	\$0.17	26	25	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	6,352,094.37	23	\$1,686,171.40	6%	at stock turnover	\$0.03	29	29	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,558,901.47	10	\$1,105,265.32	15%	45%	\$0.04	5	5	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	582,715.77	15	\$424,788.86	15%	60%	\$0.07	1	1	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$40,256.55	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	3,790,504.51	15	\$13,347,598.77	15%	50%	\$0.32	17	18	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	4,131,980.86	12	\$9,561,260.93	15%	50%	\$0.25	18	19	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	New	1,230,044.74	15	\$17,014,558.05	20%	50%	\$0.15	5	5	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	12,958,069.03	23	\$24,560,743.96	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	4,544,842.75	18	\$6,485,460.49	15%	75%	\$0.11	5	6	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	451,564.49	18	\$1,043,650.58	15%	25%	\$0.06	1	1	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	New	1,623,037.20	10	\$2,942,629.81	18%	30%	\$0.08	5	3	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-28,686.17	45	\$39,067,189.99	15%	25%	\$0.10	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,177,987.04	20	\$1,754,764.77	15%	25%	\$0.08	2	2	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-25,989.44	45	\$1,822,317.06	45%	50%	\$0.05	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	New	8,204,438.99	23	\$21,805,290.49	4%	at stock turnover	\$0.28	7	7	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	New	1,116,883.31	3	\$2,648,331.20	0%	24%	\$0.04	3	4	BEST Simulation
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$7,600.06	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	New	90,581.61	32	\$9,235,696.92	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	10,685,961.70	23	\$6,387,059.53	3%	at stock turnover	\$0.06	25	25	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,448,601.98	10	\$866,966.24	15%	45%	\$0.04	2	2	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	3,505,182.04	4	\$556,839.83	15%	50%	\$0.04	3	3	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	490,932.69	15	\$404,601.21	15%	60%	\$0.07	1	1	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$76,187.17	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	81,927.46	15	\$22,309,710.63	20%	50%	\$0.17	11	18	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	269,378.82	5	\$46,160.16	15%	25%	\$0.03	12	25	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	9,053.52	10	\$9,330.43	33%	60%	\$0.09	1	2	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,411,590.94	10	\$738,528.68	15%	30%	\$0.05	96	199	AEG research & analysis
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	192,884.52	15	\$39,892.34	100%	at stock turnover	\$0.00	476	515	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	15,347.65	15	\$10,216.50	100%	at stock turnover	\$0.02	306	334	AEO 2013
Paper Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	13,404.93	15	\$6,180.62	100%	at stock turnover	\$0.03	311	618	EIA 2011/Developed from RTF
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	77,132.34	3	\$3,051,185.08	0%	24%	\$0.04	8	20	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	26,481.30	10	\$2,998,086.47	15%	24%	\$0.05	1	2	6th Plan
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	New	63,799.73	15	\$17,014,558.05	20%	50%	\$0.15	3	5	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	215,757.53	5	\$45,956.59	15%	25%	\$0.03	4	6	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	7,358.52	10	\$5,717.01	44%	60%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,127,834.16	10	\$735,305.44	15%	30%	\$0.06	31	44	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	192,884.52	15	\$39,892.34	100%	at stock turnover	\$0.00	185	206	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	15,347.65	15	\$10,216.50	100%	at stock turnover	\$0.02	119	131	AEO 2013
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	61,594.46	3	\$2,648,331.20	0%	24%	\$0.04	3	4	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	5,170.46	32	\$9,235,696.92	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	3,997,917.70	23	\$34,261,272.61	2%	at stock turnover	\$0.16	13	13	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$14,718,153.56	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	Existing	11,420,175.17	15	\$22,309,710.63	20%	50%	\$0.17	163	166	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,870,767.98	23	\$26,479,865.85	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	1,944,395.90	18	\$9,631,442.70	15%	75%	\$0.10	7	7	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,625,005.98	18	\$1,285,546.12	15%	25%	\$0.07	8	8	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	46,091,222.88	45	\$95,181,865.96	15%	25%	\$0.16	222	223	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	731,389.31	20	\$1,673,759.71	15%	25%	\$0.08	4	4	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	17,330,488.88	45	\$12,505,773.79	45%	50%	\$0.06	42	42	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	Existing	10,104,296.35	3	\$3,051,185.08	0%	24%	\$0.04	117	117	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,833.06	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	3,468,271.76	10	\$2,998,086.47	15%	24%	\$0.05	16	16	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	4,521,857.14	23	\$27,895,146.87	2%	at stock turnover	\$0.17	9	8	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$9,561,260.93	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	New	10,725,556.04	15	\$17,014,558.05	20%	50%	\$0.15	55	55	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	3,367,382.36	23	\$18,568,093.62	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	New	872,529.32	18	\$6,485,460.49	15%	75%	\$0.11	1	1	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,297,682.81	18	\$1,043,650.58	15%	25%	\$0.06	2	2	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	32,854,095.13	45	\$39,067,189.99	15%	25%	\$0.10	56	56	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	933,543.25	20	\$1,754,764.77	15%	25%	\$0.08	2	2	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	3,115,380.26	45	\$1,822,317.06	45%	50%	\$0.05	3	3	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	New	9,505,640.46	3	\$2,648,331.20	0%	24%	\$0.04	39	39	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$7,600.06	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	New	868,855.68	32	\$9,235,696.92	15%	52%	\$0.39	6	6	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	Existing	486,494.71	15	\$22,309,710.63	20%	50%	\$0.17	65	109	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	387,004.87	15	\$80,040.27	100%	at stock turnover	\$0.01	3,960	4,463	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,000,946.45	5	\$391,080.57	5%	40%	\$0.03	113	211	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	2,583,240.95	5	\$521,452.07	15%	50%	\$0.03	143	275	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,035,603.87	12	\$3,232,381.96	3%	25%	\$0.09	301	614	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	526,350.49	16	\$59,511.15	1%	3%	\$0.01	5	10	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	3,360,459.35	10	\$1,721,209.17	7%	60%	\$0.05	616	1,170	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$2,086,622.58	15%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,168,278.23	8	\$279,352.96	7%	15%	\$0.03	48	89	CA - DEER
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	223,497.09	5	\$22,172.49	10%	25%	\$0.01	4	11	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	21,910.84	15	\$14,585.44	100%	at stock turnover	\$0.02	2,367	2,589	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	36,684.10	15	\$16,913.96	100%	at stock turnover	\$0.03	615	1,223	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	489,696.48	3	\$3,051,185.08	0%	24%	\$0.04	56	119	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	168,114.59	10	\$2,998,086.47	15%	24%	\$0.05	8	12	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	New	400,490.39	15	\$17,014,558.05	20%	50%	\$0.15	22	31	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	387,004.87	15	\$80,040.27	100%	at stock turnover	\$0.00	1,531	1,703	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,601,144.01	5	\$390,690.39	5%	40%	\$0.04	36	49	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,046,305.49	5	\$520,926.18	15%	50%	\$0.04	45	62	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	2,523,982.44	12	\$3,038,902.85	4%	25%	\$0.09	95	133	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	437,333.06	16	\$59,273.65	1%	3%	\$0.01	2	2	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	2,768,904.31	10	\$1,643,393.41	22%	60%	\$0.05	115	162	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$2,086,622.58	18%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	970,458.80	8	\$271,973.44	7%	15%	\$0.03	15	21	CA - DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	181,254.74	5	\$22,036.77	10%	25%	\$0.01	1	2	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	21,910.84	15	\$14,585.44	100%	at stock turnover	\$0.02	924	1,014	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	36,684.10	15	\$16,913.96	100%	at stock turnover	\$0.03	238	454	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	36,684.10	15	\$16,913.96	100%	at stock turnover	\$0.03	238	454	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	403,249.96	3	\$2,648,331.20	0%	24%	\$0.04	18	25	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	32,457.91	32	\$9,235,696.92	15%	52%	\$0.39	2	3	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$848.22	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,742,365.48	3	\$2,344,566.46	10%	35%	\$0.06	211	211	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,523,794.41	3	\$3,051,185.08	0%	24%	\$0.04	177	177	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	523,037.74	10	\$2,998,086.47	15%	24%	\$0.05	24	24	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$848.22	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	New	1,743,458.75	3	\$2,344,566.46	10%	35%	\$0.06	69	69	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,523,794.41	3	\$2,648,331.20	0%	24%	\$0.04	58	58	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	141,521.21	32	\$9,235,696.92	15%	52%	\$0.39	8	8	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	12,130,343.47	10	\$369,264.34	15%	75%	\$0.00	1,814	1,814	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	13,358,872.78	15	\$5,363,875.41	15%	50%	\$0.04	1,135	1,195	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	3,174,552.69	15	\$1,036,542.49	15%	38%	\$0.04	174	182	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	371,502.32	5	\$63,684.40	15%	50%	\$0.04	32	33	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	5,725,203.08	20	\$4,453,836.53	15%	50%	\$0.07	463	532	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	3,178,735.34	15	\$1,044,363.09	15%	38%	\$0.04	174	182	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	6,356,777.76	10	\$2,318,101.98	15%	50%	\$0.05	527	579	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$12,723.31	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	5,131,703.48	15	\$2,456,395.86	8%	38%	\$0.05	362	403	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	3,041,300.33	3	\$262,015.33	8%	38%	\$0.03	223	232	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	8,092,242.01	15	\$3,930,229.98	8%	38%	\$0.05	569	638	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$3,392.88	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	36,005,607.63	10	\$3,119,229.33	8%	38%	\$0.01	2,666	2,692	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	Existing	12,130,343.47	15	\$909,767.45	8%	38%	\$0.01	907	907	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	Existing	6,208,809.11	3	\$258,775.13	8%	38%	\$0.01	447	464	Scaled from Optimization
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	18,527,938.84	10	\$2,329,027.06	8%	38%	\$0.02	1,326	1,385	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,459,799.79	8	\$2,253,552.39	10%	50%	\$0.25	695	740	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,035,746.22	8	\$798,972.88	5%	25%	\$0.13	247	263	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$5,326.83	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	63,504,451.01	10	\$5,324,568.87	15%	29%	\$0.01	2,254	2,255	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	542,168.63	1	\$20,306.40	15%	52%	\$0.04	48	50	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	26,410,766.85	17	\$2,032,692.72	5%	6%	\$0.01	328	329	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	4,137,695.79	10	\$954,977.60	15%	36%	\$0.03	1,060	1,096	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	25,350,512.33	17	\$11,006,696.63	25%	44%	\$0.05	5,833	6,001	RSMMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$7,135,316.19	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	18,445,694.11	10	\$3,449,305.88	15%	29%	\$0.03	635	655	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	22,289,185.68	10	\$2,815,973.52	8%	38%	\$0.02	1,650	1,666	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	Existing	22,515,214.45	15	\$3,433,240.58	8%	38%	\$0.02	1,682	1,683	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	11,768,592.29	3	\$976,556.33	8%	38%	\$0.03	863	880	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	36,480,440.52	12	\$9,536,764.32	8%	38%	\$0.03	2,661	2,727	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	Existing	9,987,988.73	3	\$2,344,566.46	10%	35%	\$0.06	2,989	3,111	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	Existing	8,862,470.67	3	\$3,051,185.08	0%	24%	\$0.04	2,577	2,732	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,001,512.13	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	2,998,250.39	10	\$2,998,086.47	15%	24%	\$0.05	337	350	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$1,651,689.01	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	New	9,658,037.30	3	\$2,344,566.46	10%	35%	\$0.06	1,060	1,060	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	12,130,343.47	10	\$369,264.34	15%	75%	\$0.00	643	643	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	12,731,646.00	15	\$5,363,875.41	15%	50%	\$0.04	390	390	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	3,060,654.83	15	\$1,036,542.49	15%	38%	\$0.04	60	60	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	357,132.42	5	\$63,684.40	15%	50%	\$0.04	11	11	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	5,403,588.66	20	\$4,453,836.53	15%	50%	\$0.07	164	164	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	3,060,251.75	15	\$1,044,363.09	15%	38%	\$0.04	60	60	MI - TRM
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	6,111,528.15	10	\$2,318,101.98	15%	50%	\$0.05	187	187	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$12,723.31	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	New	4,908,790.18	15	\$2,456,395.86	8%	38%	\$0.05	128	128	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	2,939,421.72	3	\$262,015.33	8%	38%	\$0.03	77	77	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	7,713,096.51	15	\$3,930,229.98	8%	38%	\$0.05	202	202	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$3,392.88	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	35,693,820.49	10	\$3,119,229.33	8%	38%	\$0.01	944	944	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	New	12,130,343.47	15	\$909,767.45	8%	38%	\$0.01	321	321	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	New	6,000,043.15	3	\$258,775.13	8%	38%	\$0.01	158	158	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	17,826,411.40	10	\$2,329,027.06	8%	38%	\$0.02	470	470	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,404,406.32	8	\$2,253,552.39	10%	50%	\$0.25	246	246	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	996,663.88	8	\$798,972.88	5%	25%	\$0.13	87	87	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$5,326.83	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	63,475,758.78	10	\$5,324,568.87	15%	29%	\$0.01	798	798	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	513,062.05	1	\$20,306.40	15%	52%	\$0.04	17	17	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	26,350,835.39	17	\$2,032,692.72	5%	6%	\$0.01	116	116	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	3,981,949.03	10	\$954,977.60	15%	36%	\$0.03	368	368	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	25,460,606.72	17	\$6,604,007.80	25%	44%	\$0.03	2,130	2,130	RSMMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$7,135,316.19	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	17,947,173.31	10	\$3,449,305.88	15%	29%	\$0.03	225	225	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	22,096,174.59	10	\$2,815,973.52	8%	38%	\$0.02	585	585	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	New	22,505,041.75	15	\$3,433,240.58	8%	38%	\$0.02	596	596	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	New	11,349,264.02	3	\$976,556.33	8%	38%	\$0.03	300	300	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	35,005,119.42	12	\$9,536,764.32	8%	38%	\$0.03	924	924	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	New	8,513,419.40	3	\$2,648,331.20	0%	24%	\$0.04	898	898	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,001,512.13	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	New	780,269.18	32	\$9,235,696.92	15%	52%	\$0.39	127	127	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$1,651,689.01	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,312,621.32	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$48,060.18	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$226,237.39	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$269,869.85	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$77,951.47	0%	0%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$172,901.28	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$8,340,247.43	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$926,036.32	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$8,476,437.73	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$79,766.66	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$288.39	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$1,747.33	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$59,765.62	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	4,866,546.84	10	\$1,822,639.38	15%	25%	\$0.06	575	576	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	53,369.87	5	\$31,180.59	15%	38%	\$0.14	15	15	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$4,332,591.88	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	6,038,140.23	10	\$13,692,909.36	15%	40%	\$0.33	1,848	1,881	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	Existing	197,249.21	5	\$54,387.90	15%	75%	\$0.07	29	29	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,967,232.96	10	\$1,087,775.01	15%	75%	\$0.08	290	294	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	Existing	933,312.46	5	\$1,326,701.78	15%	75%	\$0.33	672	698	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	610,109.60	15	\$295,486.12	15%	50%	\$0.06	53	54	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,170,273.17	18	\$709,163.28	15%	50%	\$0.06	100	104	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	416,905.42	3	\$39,391.36	15%	50%	\$0.04	36	36	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,203,391.81	15	\$590,955.27	15%	50%	\$0.06	104	106	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	Existing	360,504.04	3	\$2,344,566.46	10%	35%	\$0.06	556	112	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	Existing	1,418,687.19	3	\$3,051,185.08	0%	24%	\$0.04	424	424	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	Existing	486,960.12	10	\$2,998,086.47	15%	24%	\$0.05	57	57	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,312,621.32	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$48,060.18	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$226,237.39	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$269,869.85	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	New	358,174.47	3	\$2,344,566.46	10%	35%	\$0.06	197	83	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$77,951.47	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$172,901.28	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$8,340,247.43	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$926,036.32	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$8,476,437.73	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$79,766.66	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$288.39	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$1,747.33	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$59,765.62	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	4,868,954.88	10	\$1,822,639.38	15%	25%	\$0.06	204	204	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	New	52,642.83	5	\$31,180.59	15%	38%	\$0.14	5	5	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$4,332,591.88	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	New	5,955,041.55	10	\$13,692,909.36	15%	40%	\$0.33	656	656	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	New	195,458.41	5	\$54,387.90	15%	75%	\$0.07	10	10	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	1,945,129.07	10	\$1,087,775.01	15%	75%	\$0.08	103	103	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	New	904,288.44	5	\$1,326,701.78	15%	75%	\$0.33	238	238	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	585,531.04	15	\$295,486.12	15%	50%	\$0.06	18	18	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	New	1,151,273.40	18	\$709,163.28	15%	50%	\$0.06	35	35	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	New	416,905.42	3	\$39,391.36	15%	50%	\$0.04	13	13	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,212,103.08	15	\$590,955.27	15%	50%	\$0.06	37	37	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	New	1,418,499.08	3	\$2,648,331.20	0%	24%	\$0.04	150	150	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	New	121,797.79	32	\$9,235,696.92	15%	52%	\$0.39	20	20	6th Plan
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$14,718,153.56	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	289,343.76	3	\$3,051,185.08	0%	24%	\$0.04	14	20	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	99,324.30	10	\$2,998,086.47	15%	24%	\$0.05	2	2	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	106,308.39	15	\$22,901.96	15%	35%	\$0.02	4	5	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	3,680,268.32	20	\$4,086,926.61	100%	at stock turnover	\$0.11	103	103	BEST Simulation
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$9,561,260.93	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	New	92,709.32	3	\$2,648,331.20	0%	24%	\$0.04	2	2	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	8,698.18	32	\$9,235,696.92	15%	52%	\$0.39	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	34,104.63	15	\$9,500.07	15%	35%	\$0.03	1	1	6th Plan
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,967,638.23	20	\$2,454,183.38	100%	at stock turnover	\$0.13	14	14	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	34,014.63	23	\$70,862.90	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	18,644.99	23	\$10,714.67	6%	at stock turnover	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	5,955.19	10	\$1,658.23	15%	45%	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,718.61	15	\$1,111.26	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	449.41	15	\$391.05	15%	75%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	16,527.36	15	\$1,947,305.81	15%	50%	\$11.86	0	0	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	Existing	14,604.74	12	\$26,821.24	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	Existing	4,323.28	15	\$40,111.83	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	32,820.44	23	\$63,829.41	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	Existing	13,852.71	18	\$17,552.48	15%	75%	\$0.10	0	0	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	844.05	18	\$2,343.80	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	Existing	5,882.92	10	\$8,961.86	18%	30%	\$0.07	0	0	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	11,404.13	45	\$173,453.27	15%	25%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,572.77	20	\$3,049.16	15%	25%	\$0.08	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	102.95	45	\$22,789.52	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	Existing	26,636.96	23	\$72,706.92	4%	at stock turnover	\$0.28	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	Existing	3,941.92	3	\$1,316.68	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$4,133.20	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	Existing	1,343.46	10	\$6,229.50	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	30,453.22	23	\$16,211.76	3%	at stock turnover	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,558.50	10	\$2,477.44	15%	45%	\$0.04	0	0	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	12,049.64	4	\$1,576.56	15%	50%	\$0.03	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,403.62	15	\$1,598.83	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	435.67	15	\$396.00	15%	75%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	24,463.20	23	\$49,689.97	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,335.59	23	\$34,166,480.01	6%	at stock turnover	\$2,662.81	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,334.61	10	\$2,014.62	15%	45%	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,210.85	15	\$774.67	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$58,721.12	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,288.05	15	\$1,947,305.81	15%	50%	\$25.48	0	0	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	New	7,955.22	12	\$17,423.78	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	New	2,368.25	15	\$30,464.40	20%	50%	\$0.15	0	0	BEST Simulation
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	23,613.99	23	\$44,758.00	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	New	8,337.25	18	\$11,817.98	15%	75%	\$0.11	0	0	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	869.23	18	\$1,900.78	15%	25%	\$0.06	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	New	3,157.49	10	\$5,363.26	18%	30%	\$0.08	0	0	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	New	-55.20	45	\$71,192.49	15%	25%	\$0.10	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	New	2,266.62	20	\$3,197.66	15%	25%	\$0.08	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-50.03	45	\$3,321.41	45%	50%	\$0.05	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	New	14,951.27	23	\$39,736.63	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	New	2,187.40	3	\$1,163.24	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$11,087.86	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	New	182.72	32	\$19,485.43	15%	52%	\$0.41	0	0	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	19,473.44	23	\$11,639.39	3%	at stock turnover	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,454.46	10	\$1,579.03	15%	45%	\$0.04	0	0	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	6,376.55	4	\$1,014.74	15%	50%	\$0.04	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	900.57	15	\$737.54	15%	60%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$111,148.39	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	Existing	108.23	15	\$40,111.83	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	352.98	5	\$59.40	15%	25%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	11.96	10	\$12.37	33%	60%	\$0.09	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,865.89	10	\$970.19	15%	30%	\$0.05	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	253.17	15	\$52.36	100%	at stock turnover	\$0.00	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.14	15	\$13.41	100%	at stock turnover	\$0.02	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	17.59	15	\$8.11	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	Existing	102.14	3	\$1,316.68	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	32.52	10	\$6,229.50	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	New	84.28	15	\$30,464.40	20%	50%	\$0.15	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	282.71	5	\$59.40	15%	25%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	9.72	10	\$7.42	44%	60%	\$0.06	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,490.02	10	\$965.24	15%	30%	\$0.06	0	0	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	253.17	15	\$52.36	100%	at stock turnover	\$0.00	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.14	15	\$13.41	100%	at stock turnover	\$0.02	0	0	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	17.59	15	\$8.11	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	New	81.81	3	\$1,163.24	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	New	6.83	32	\$19,485.43	15%	52%	\$0.41	0	0	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	7,285.56	23	\$62,435.65	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$26,821.24	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	Existing	20,950.87	15	\$40,111.83	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,409.17	23	\$48,255.29	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	Existing	3,567.08	18	\$17,552.48	15%	75%	\$0.10	0	0	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,981.16	18	\$2,343.80	15%	25%	\$0.07	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	Existing	84,556.82	45	\$173,453.27	15%	25%	\$0.16	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,341.77	20	\$3,049.16	15%	25%	\$0.08	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	31,793.74	45	\$22,789.52	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	Existing	18,413.45	3	\$1,316.68	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$4,133.20	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	Existing	6,362.74	10	\$6,229.50	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	8,240.36	23	\$50,834.41	2%	at stock turnover	\$0.17	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,423.78	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	New	19,676.54	15	\$30,464.40	20%	50%	\$0.15	0	0	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	6,136.51	23	\$33,837.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	New	1,600.69	18	\$11,817.98	15%	75%	\$0.11	0	0	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	2,380.67	18	\$1,900.78	15%	25%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	New	60,272.66	45	\$71,192.49	15%	25%	\$0.10	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	New	1,712.64	20	\$3,197.66	15%	25%	\$0.08	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,715.34	45	\$3,321.41	45%	50%	\$0.05	0	0	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	New	17,322.50	3	\$1,163.24	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$11,087.86	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	New	1,593.95	32	\$19,485.43	15%	52%	\$0.41	0	0	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	Existing	642.72	15	\$40,111.83	20%	50%	\$0.18	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	507.97	15	\$105.06	100%	at stock turnover	\$0.01	2	2	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,510.92	5	\$512.32	5%	40%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,495.83	5	\$685.57	15%	50%	\$0.03	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,010.46	12	\$4,242.10	3%	25%	\$0.09	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	690.87	16	\$79.20	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,439.83	10	\$2,259.65	7%	60%	\$0.05	0	1	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$304,421.22	15%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,530.81	8	\$366.30	7%	15%	\$0.03	0	0	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	292.87	5	\$29.70	10%	25%	\$0.01	0	0	AEG research & analysis
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	28.76	15	\$19.14	100%	at stock turnover	\$0.02	1	1	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	48.15	15	\$22.20	100%	at stock turnover	\$0.03	0	1	EIA 2011/Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	Existing	664.84	3	\$1,316.68	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	222.11	10	\$6,229.50	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	New	529.06	15	\$30,464.40	20%	50%	\$0.15	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	507.97	15	\$105.06	100%	at stock turnover	\$0.00	1	1	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,098.02	5	\$512.32	5%	40%	\$0.04	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,681.34	5	\$683.09	15%	50%	\$0.04	0	0	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,334.36	12	\$3,989.65	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	573.05	16	\$76.72	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,658.10	10	\$2,158.17	22%	60%	\$0.05	0	0	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$304,421.22	18%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,271.62	8	\$356.40	7%	15%	\$0.03	0	0	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	237.51	5	\$29.70	10%	25%	\$0.02	0	0	AEG research & analysis
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	28.76	15	\$19.14	100%	at stock turnover	\$0.02	0	1	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	48.15	15	\$22.20	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	New	552.77	3	\$1,163.24	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	New	42.88	32	\$19,485.43	15%	52%	\$0.41	0	0	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$1,237.48	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	Existing	1,680.26	3	\$7,677.35	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,459.69	3	\$1,316.68	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	504.39	10	\$6,229.50	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$1,237.48	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	New	1,681.31	3	\$7,677.35	5%	39%	\$0.09	0	0	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	New	1,459.69	3	\$1,163.24	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	New	135.98	32	\$19,485.43	15%	52%	\$0.41	0	0	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	56,401.96	10	\$1,717.63	15%	75%	\$0.00	3	3	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	62,005.95	15	\$24,940.27	15%	50%	\$0.04	2	2	OH - TRM
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	14,734.85	15	\$4,818.77	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,724.35	5	\$297.00	15%	50%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	26,941.12	20	\$20,708.07	15%	50%	\$0.07	1	1	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	14,754.27	15	\$4,855.89	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	29,753.73	10	\$10,778.49	15%	50%	\$0.05	1	1	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$18,562.27	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	Existing	24,019.45	15	\$11,421.98	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	Existing	14,116.34	3	\$1,217.68	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	37,876.35	15	\$18,275.17	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$4,949.94	15%	50%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	72,454.38	10	\$6,288.90	8%	38%	\$0.01	2	2	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	Existing	24,452.75	15	\$1,833.95	8%	38%	\$0.01	1	1	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	Existing	12,494.07	3	\$522.22	8%	38%	\$0.01	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	37,284.03	10	\$4,695.02	8%	38%	\$0.02	1	1	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	3,535.94	8	\$5,477.11	10%	50%	\$0.25	1	1	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	2,508.79	8	\$1,942.85	5%	25%	\$0.13	0	0	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$7,783.78	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$7,410.06	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$27.22	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	63,936.02	17	\$4,940.04	5%	6%	\$0.01	0	0	E3T Website
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	10,047.85	10	\$2,321.52	15%	36%	\$0.03	1	1	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	Existing	61,825.95	17	\$26,749.47	25%	44%	\$0.05	6	6	RSMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$9,929.58	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$4,798.97	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	60,741.96	10	\$7,687.25	8%	38%	\$0.02	2	2	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	Existing	61,357.88	15	\$9,372.71	8%	38%	\$0.02	2	2	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	Existing	32,071.51	3	\$2,665.54	8%	38%	\$0.03	1	1	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	99,415.78	12	\$26,034.20	8%	38%	\$0.03	3	3	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	Existing	24,209.93	3	\$7,677.35	5%	39%	\$0.09	4	4	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	Existing	22,152.15	3	\$1,316.68	0%	5%	\$0.01	1	1	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,784.34	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	Existing	7,285.51	10	\$6,229.50	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$3,717.40	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	New	23,432.67	3	\$7,677.35	5%	39%	\$0.09	1	1	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	New	56,401.96	10	\$1,717.63	15%	75%	\$0.00	1	1	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	59,591.96	15	\$24,940.27	15%	50%	\$0.04	1	1	OH - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	14,206.25	15	\$4,818.77	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,657.66	5	\$297.00	15%	50%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	New	25,544.73	20	\$20,708.07	15%	50%	\$0.07	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	14,204.39	15	\$4,855.89	15%	38%	\$0.04	0	0	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	28,605.13	10	\$10,778.49	15%	50%	\$0.05	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$18,562.27	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	New	22,315.37	15	\$11,421.98	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	New	13,643.52	3	\$1,217.68	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	36,760.70	15	\$18,275.17	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$4,949.94	15%	50%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	71,827.03	10	\$6,288.90	8%	38%	\$0.01	1	1	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	New	24,385.33	15	\$1,833.95	8%	38%	\$0.01	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	New	12,074.01	3	\$522.22	8%	38%	\$0.01	0	0	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	New	35,872.49	10	\$4,695.02	8%	38%	\$0.02	0	0	6th Plan
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	3,400.33	8	\$5,477.11	10%	50%	\$0.25	0	0	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2,413.11	8	\$1,942.85	5%	25%	\$0.13	0	0	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$7,783.78	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$7,410.06	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$27.22	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	63,892.01	17	\$4,940.04	5%	6%	\$0.01	0	0	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	9,704.23	10	\$2,321.52	15%	36%	\$0.03	0	0	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	New	62,109.05	17	\$16,050.18	25%	44%	\$0.03	2	2	RSMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$9,929.58	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$4,798.97	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	60,216.02	10	\$7,687.25	8%	38%	\$0.02	1	1	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	New	61,330.15	15	\$9,372.71	8%	38%	\$0.02	1	1	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	New	30,928.88	3	\$2,665.54	8%	38%	\$0.03	0	0	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	New	95,395.66	12	\$26,034.20	8%	38%	\$0.03	1	1	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	New	22,126.89	3	\$1,163.24	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,784.34	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	New	1,889.18	32	\$19,485.43	15%	52%	\$0.41	0	0	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$3,717.40	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$3,583.76	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$7.42	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$39.60	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$47.02	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$113,724.84	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$29.70	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,428.06	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$158.40	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,452.81	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$99.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$433.12	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	Existing	0.00	10	\$2,544.27	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$87,193.17	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,497.13	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$59.40	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$5,373.16	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$26,274.27	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	Existing	239.88	5	\$64.35	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,392.34	10	\$1,299.36	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	Existing	1,820.35	5	\$2,546.74	15%	75%	\$0.33	1	1	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	4,676.59	15	\$2,234.90	15%	50%	\$0.06	0	0	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	Existing	8,969.76	18	\$5,365.73	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	Existing	3,148.72	3	\$297.00	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	9,224.01	15	\$4,472.27	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	Existing	916.43	3	\$7,677.35	5%	39%	\$0.09	1	0	Energy Management Program Design for PC
Petroleum Refining	Process	Strategic Energy Management	per Facility	Existing	2,723.69	3	\$1,316.68	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	Existing	938.99	10	\$6,229.50	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$3,583.76	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$7.42	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$39.60	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$47.02	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Commissioning	per Facility	New	910.58	3	\$7,677.35	5%	39%	\$0.09	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$113,724.84	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$29.70	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,428.06	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$158.40	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,452.81	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$99.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$433.12	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	New	0.00	10	\$2,544.27	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	New	0.00	10	\$87,193.17	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,497.13	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$59.40	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$5,373.16	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$26,274.27	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	New	240.03	5	\$64.35	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,388.64	10	\$1,299.36	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	New	1,793.48	5	\$2,546.74	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	4,669.69	15	\$2,234.90	15%	50%	\$0.06	0	0	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	New	8,870.23	18	\$5,365.73	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	New	3,148.72	3	\$297.00	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	9,181.11	15	\$4,472.27	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Strategic Energy Management	per Facility	New	2,723.69	3	\$1,163.24	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	New	241.56	32	\$19,485.43	15%	52%	\$0.41	0	0	6th Plan
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$26,821.24	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	Existing	527.99	3	\$1,316.68	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	Existing	182.20	10	\$6,229.50	15%	24%	\$0.05	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	193.39	15	\$42.07	15%	35%	\$0.02	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,706.70	20	\$7,447.77	100%	at stock turnover	\$0.11	0	0	BEST Simulation
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$17,423.78	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	New	169.38	3	\$1,163.24	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	New	15.96	32	\$19,485.43	15%	52%	\$0.41	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	62.04	15	\$17.32	15%	35%	\$0.03	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,585.70	20	\$4,472.35	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	217,451.93	23	\$453,019.06	2%	at stock turnover	\$0.16	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	119,195.46	23	\$68,497.77	6%	at stock turnover	\$0.06	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	38,137.43	10	\$10,606.57	15%	45%	\$0.04	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	11,006.04	15	\$7,098.60	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	2,878.04	15	\$2,493.53	15%	75%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	105,841.21	15	\$985,387.77	15%	50%	\$0.94	2	2	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	93,529.07	12	\$171,467.24	15%	50%	\$0.22	1	2	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	Existing	27,686.37	15	\$258,435.10	20%	50%	\$0.17	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	209,817.63	23	\$408,054.67	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	88,713.46	18	\$112,206.21	15%	75%	\$0.10	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	5,405.37	18	\$14,976.19	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	Existing	37,674.48	10	\$57,292.26	18%	30%	\$0.07	0	0	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	73,032.41	45	\$1,108,870.59	15%	25%	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	16,476.11	20	\$19,499.86	15%	25%	\$0.08	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	659.29	45	\$145,692.86	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	Existing	170,287.25	23	\$464,807.66	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,091.51	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	Existing	8,603.56	10	\$28,896.61	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	194,684.23	23	\$103,640.11	3%	at stock turnover	\$0.06	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	54,808.84	10	\$15,835.34	15%	45%	\$0.04	0	0	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	77,166.39	4	\$10,098.10	15%	50%	\$0.03	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	15,392.83	15	\$10,215.82	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	2,790.04	15	\$2,531.10	15%	75%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	156,390.66	23	\$317,662.78	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	8,538.28	23	\$6,224,088.36	6%	at stock turnover	\$75.88	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	46,971.51	10	\$12,875.92	15%	45%	\$0.04	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	7,754.39	15	\$4,948.23	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$29,714.43	15%	75%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	46,672.52	15	\$985,387.77	15%	50%	\$2.02	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	New	50,945.33	12	\$111,388.39	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	New	15,166.30	15	\$196,751.93	20%	50%	\$0.15	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	150,961.77	23	\$286,133.17	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	New	53,391.72	18	\$75,556.00	15%	75%	\$0.11	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	5,566.61	18	\$12,158.29	15%	25%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	New	20,220.70	10	\$34,281.93	18%	30%	\$0.08	0	0	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	-353.48	45	\$455,133.18	15%	25%	\$0.10	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	New	14,515.52	20	\$20,442.91	15%	25%	\$0.08	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-320.38	45	\$21,229.42	45%	50%	\$0.05	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	New	95,581.88	23	\$254,032.08	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$5,610.75	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	New	1,170.11	32	\$86,682.31	15%	52%	\$0.37	0	0	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	124,491.67	23	\$74,409.37	3%	at stock turnover	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	28,526.26	10	\$10,098.10	15%	45%	\$0.04	0	0	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	40,835.44	4	\$6,487.43	15%	50%	\$0.04	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	5,767.20	15	\$4,714.03	15%	60%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$56,244.00	15%	75%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	Existing	848.35	15	\$258,435.10	20%	50%	\$0.17	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	2,766.68	5	\$474.66	15%	25%	\$0.03	0	0	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	93.75	10	\$95.18	33%	60%	\$0.09	0	0	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	14,617.41	10	\$7,584.53	15%	30%	\$0.05	1	3	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	1,981.04	15	\$409.72	100%	at stock turnover	\$0.00	7	7	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	157.63	15	\$104.93	100%	at stock turnover	\$0.02	4	5	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	137.68	15	\$63.48	100%	at stock turnover	\$0.03	4	9	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	274.22	10	\$28,896.61	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	New	660.61	15	\$196,751.93	20%	50%	\$0.15	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	2,215.96	5	\$472.15	15%	25%	\$0.03	0	0	Illinois TRM
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	76.19	10	\$58.86	44%	60%	\$0.06	0	0	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	11,678.98	10	\$7,551.97	15%	30%	\$0.06	0	1	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	1,981.04	15	\$409.72	100%	at stock turnover	\$0.00	3	3	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	157.63	15	\$104.93	100%	at stock turnover	\$0.02	2	2	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	137.68	15	\$63.48	100%	at stock turnover	\$0.03	2	3	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	53.54	32	\$86,682.31	15%	52%	\$0.37	0	0	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	46,575.82	23	\$399,144.52	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$171,467.24	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	Existing	134,171.26	15	\$258,435.10	20%	50%	\$0.17	3	3	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	21,794.49	23	\$308,490.98	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	Existing	22,843.88	18	\$112,206.21	15%	75%	\$0.10	0	0	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	19,091.65	18	\$14,976.19	15%	25%	\$0.07	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	541,510.00	45	\$1,108,870.59	15%	25%	\$0.16	4	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	8,592.84	20	\$19,499.86	15%	25%	\$0.08	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	203,610.19	45	\$145,692.86	45%	50%	\$0.06	1	1	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$2,091.51	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	Existing	40,747.59	10	\$28,896.61	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	52,679.73	23	\$324,979.03	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$111,388.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	New	126,010.36	15	\$196,751.93	20%	50%	\$0.15	1	1	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	39,230.07	23	\$216,318.67	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	New	10,250.92	18	\$75,556.00	15%	75%	\$0.11	0	0	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	15,246.06	18	\$12,158.29	15%	25%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	New	385,992.04	45	\$455,133.18	15%	25%	\$0.10	1	1	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	New	10,967.90	20	\$20,442.91	15%	25%	\$0.08	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	36,601.61	45	\$21,229.42	45%	50%	\$0.05	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$5,610.75	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	New	10,207.79	32	\$86,682.31	15%	52%	\$0.37	0	0	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	Existing	5,037.69	15	\$258,435.10	20%	50%	\$0.17	1	2	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	3,974.77	15	\$822.06	100%	at stock turnover	\$0.01	55	62	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	19,681.10	5	\$4,016.44	5%	40%	\$0.03	1	3	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	27,401.19	5	\$5,355.26	15%	50%	\$0.03	2	4	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	31,434.59	12	\$33,198.60	3%	25%	\$0.09	4	9	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	5,405.93	16	\$611.17	1%	3%	\$0.01	0	0	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	34,800.42	10	\$17,677.62	7%	60%	\$0.05	9	16	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$154,045.11	15%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	11,998.90	8	\$2,869.25	7%	15%	\$0.03	1	1	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	2,295.45	5	\$227.94	10%	25%	\$0.01	0	0	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	225.04	15	\$149.80	100%	at stock turnover	\$0.02	33	36	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	376.77	15	\$173.72	100%	at stock turnover	\$0.03	9	17	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	1,740.97	10	\$28,896.61	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	New	4,146.77	15	\$196,751.93	20%	50%	\$0.15	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	3,974.77	15	\$822.06	100%	at stock turnover	\$0.00	21	24	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	15,535.19	5	\$4,012.69	5%	40%	\$0.04	0	1	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	21,926.25	5	\$5,350.25	15%	50%	\$0.04	1	1	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	26,134.82	12	\$31,211.04	4%	25%	\$0.09	1	2	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	4,491.67	16	\$608.67	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	28,672.71	10	\$16,878.59	22%	60%	\$0.05	2	2	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$154,045.11	18%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	9,967.18	8	\$2,792.85	7%	15%	\$0.03	0	0	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	1,861.59	5	\$226.68	10%	25%	\$0.01	0	0	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	225.04	15	\$149.80	100%	at stock turnover	\$0.02	13	14	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	376.77	15	\$173.72	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	336.07	32	\$86,682.31	15%	52%	\$0.37	0	0	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$626.20	0%	0%	\$10.00	0	0	MI - TRM

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Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	Existing	18,518.25	3	\$22,578.25	10%	40%	\$0.07	4	4	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	5,558.96	10	\$28,896.61	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$626.20	0%	0%	\$10.00	0	0	MI - TRM
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	New	18,529.88	3	\$22,578.25	10%	40%	\$0.07	1	1	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	1,501.05	32	\$86,682.31	15%	52%	\$0.37	0	0	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	28,830.45	10	\$877.93	15%	75%	\$0.00	6	6	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	31,750.33	15	\$12,748.17	15%	50%	\$0.04	4	4	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	7,545.03	15	\$2,463.47	15%	38%	\$0.04	1	1	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	882.96	5	\$151.54	15%	50%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	14,082.02	20	\$10,585.28	15%	50%	\$0.07	2	2	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	7,554.97	15	\$2,482.26	15%	38%	\$0.04	1	1	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	Existing	12,556.66	15	\$5,838.69	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	7,228.33	3	\$622.44	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and	per Facility	Existing	19,799.59	15	\$9,341.65	8%	38%	\$0.05	2	2	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
		Improvements - Optimized System											
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	237,709.22	10	\$20,593.20	8%	38%	\$0.01	24	24	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	Existing	80,084.60	15	\$6,006.51	8%	38%	\$0.01	8	8	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	Existing	40,990.59	3	\$1,708.27	8%	38%	\$0.01	4	4	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	122,321.56	10	\$15,375.71	8%	38%	\$0.02	12	12	6th Plan
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	9,192.91	8	\$13,800.19	10%	50%	\$0.25	6	6	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	6,522.51	8	\$4,893.12	5%	25%	\$0.13	2	2	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$3,938.80	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,890.54	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$11.27	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	162,157.63	17	\$12,447.60	5%	6%	\$0.01	3	3	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	25,635.65	10	\$5,847.45	15%	36%	\$0.03	9	9	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	159,234.10	17	\$67,400.37	25%	44%	\$0.05	50	51	RSMMeans 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,873.67	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,872.34	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	56,305.39	10	\$7,113.63	8%	38%	\$0.02	6	6	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	Existing	56,876.37	15	\$8,672.87	8%	38%	\$0.02	6	6	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	Existing	29,729.00	3	\$2,467.23	8%	38%	\$0.03	3	3	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	92,154.35	12	\$24,091.15	8%	38%	\$0.03	9	9	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	Existing	62,889.42	3	\$22,578.25	10%	40%	\$0.07	31	32	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

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Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$1,085.83	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	Existing	18,888.03	10	\$28,896.61	15%	24%	\$0.05	3	3	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$18,589.36	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	New	61,511.31	3	\$22,578.25	10%	40%	\$0.07	11	11	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	28,830.45	10	\$877.93	15%	75%	\$0.00	2	2	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	30,514.07	15	\$12,748.17	15%	50%	\$0.04	1	1	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	7,274.33	15	\$2,463.47	15%	38%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	848.80	5	\$151.54	15%	50%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	13,420.70	20	\$10,585.28	15%	50%	\$0.07	1	1	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	7,273.37	15	\$2,482.26	15%	38%	\$0.04	0	0	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	New	12,071.85	15	\$5,838.69	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	New	6,986.19	3	\$622.44	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	18,967.54	15	\$9,341.65	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	235,650.80	10	\$20,593.20	8%	38%	\$0.01	8	8	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	New	80,003.76	15	\$6,006.51	8%	38%	\$0.01	3	3	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	New	39,612.32	3	\$1,708.27	8%	38%	\$0.01	1	1	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	117,690.07	10	\$15,375.71	8%	38%	\$0.02	4	4	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	8,940.21	8	\$13,800.19	10%	50%	\$0.25	2	2	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	6,344.60	8	\$4,893.12	5%	25%	\$0.13	1	1	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$3,938.80	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,890.54	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$11.27	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	162,361.33	17	\$12,447.60	5%	6%	\$0.01	1	1	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	24,864.46	10	\$5,847.45	15%	36%	\$0.03	3	3	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	New	158,656.82	17	\$40,439.97	25%	44%	\$0.03	18	18	RSMeans 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,873.67	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,872.34	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	55,817.82	10	\$7,113.63	8%	38%	\$0.02	2	2	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	New	56,850.67	15	\$8,672.87	8%	38%	\$0.02	2	2	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	New	28,669.72	3	\$2,467.23	8%	38%	\$0.03	1	1	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	88,427.50	12	\$24,091.15	8%	38%	\$0.03	3	3	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$1,085.83	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	New	4,967.03	32	\$86,682.31	15%	52%	\$0.37	1	1	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$18,589.36	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$3,316.35	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$103.95	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$489.69	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$583.62	0%	0%	\$10.00	0	0	6th Plan

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Stone Clay Glass Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$57,547.75	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$374.47	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$18,042.06	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,003.84	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$18,337.63	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$1,780.91	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$219.17	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$1,287.47	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$44,122.03	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$34,815.45	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$596.14	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$96,722.80	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$261,556.08	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	Existing	4,745.73	5	\$1,282.46	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	47,013.71	10	\$25,642.88	15%	75%	\$0.08	9	10	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	Existing	18,476.30	5	\$25,342.30	15%	75%	\$0.33	18	19	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	8,487.03	15	\$4,050.26	15%	50%	\$0.06	1	1	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	Existing	16,278.18	18	\$9,719.87	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	Existing	5,714.27	3	\$539.78	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	16,739.61	15	\$8,100.52	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	Existing	6,778.56	3	\$22,578.25	10%	40%	\$0.07	17	3	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	Existing	9,382.02	10	\$28,896.61	15%	24%	\$0.05	1	1	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$3,316.35	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$103.95	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$489.69	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$583.62	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Commissioning	per Facility	New	6,771.16	3	\$22,578.25	10%	40%	\$0.07	6	3	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$57,547.75	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$374.47	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$18,042.06	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,003.84	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$18,337.63	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$1,780.91	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$219.17	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	New	0.00	10	\$1,287.47	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$44,122.03	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$34,815.45	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$596.14	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$96,722.80	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$261,556.08	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	New	4,748.71	5	\$1,282.46	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	46,684.73	10	\$25,642.88	15%	75%	\$0.08	3	3	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	New	18,297.14	5	\$25,342.30	15%	75%	\$0.33	7	7	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	8,187.26	15	\$4,050.26	15%	50%	\$0.06	0	0	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	New	16,097.52	18	\$9,719.87	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	New	5,714.27	3	\$539.78	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	16,949.01	15	\$8,100.52	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	New	2,464.31	32	\$86,682.31	15%	52%	\$0.37	1	1	6th Plan
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$171,467.24	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	1,166.84	10	\$28,896.61	15%	24%	\$0.05	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	1,238.49	15	\$266.76	15%	35%	\$0.02	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	42,875.20	20	\$47,612.78	100%	at stock turnover	\$0.11	2	2	BEST Simulation
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$111,388.39	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	New	102.19	32	\$86,682.31	15%	52%	\$0.37	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	397.32	15	\$110.21	15%	35%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	22,923.03	20	\$28,591.29	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	52,236.52	23	\$108,824.70	2%	at stock turnover	\$0.16	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	28,633.25	23	\$16,454.60	6%	at stock turnover	\$0.06	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,145.43	10	\$2,547.92	15%	45%	\$0.04	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,639.28	15	\$1,705.09	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	690.16	15	\$598.65	15%	75%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	25,381.19	15	\$545,795.01	15%	50%	\$2.16	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	22,428.61	12	\$41,189.90	15%	50%	\$0.22	1	1	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	6,639.29	15	\$61,781.39	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	50,402.60	23	\$98,023.31	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	21,273.72	18	\$26,954.70	15%	75%	\$0.10	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,296.22	18	\$3,597.47	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	9,034.45	10	\$13,762.80	18%	30%	\$0.07	0	0	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	17,513.41	45	\$266,374.05	15%	25%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,951.02	20	\$4,684.49	15%	25%	\$0.08	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	158.10	45	\$34,998.72	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	40,906.58	23	\$111,656.57	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	6,053.63	3	\$1,008.62	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,158.46	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	2,063.16	10	\$4,675.47	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	46,767.24	23	\$24,896.53	3%	at stock turnover	\$0.06	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	13,143.35	10	\$3,804.19	15%	45%	\$0.04	0	0	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	18,504.72	4	\$2,422.36	15%	50%	\$0.03	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,691.26	15	\$2,453.58	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	669.07	15	\$608.37	15%	75%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	37,568.32	23	\$76,309.27	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	2,051.07	23	\$1,758,903.72	6%	at stock turnover	\$89.26	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	11,263.81	10	\$3,093.16	15%	45%	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,859.52	15	\$1,188.98	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$16,458.48	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	11,192.32	15	\$545,795.01	15%	50%	\$4.65	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	12,216.90	12	\$26,757.69	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	New	3,636.94	15	\$46,965.56	20%	50%	\$0.15	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	36,264.19	23	\$68,735.20	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	12,803.58	18	\$18,150.39	15%	75%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,334.89	18	\$2,920.43	15%	25%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	4,848.98	10	\$8,235.48	18%	30%	\$0.08	0	0	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	-84.76	45	\$109,332.42	15%	25%	\$0.10	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	3,480.87	20	\$4,910.63	15%	25%	\$0.08	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-76.83	45	\$5,100.01	45%	50%	\$0.05	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	22,960.78	23	\$61,023.84	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	3,359.21	3	\$774.85	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,107.73	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	280.60	32	\$12,965.75	15%	52%	\$0.32	0	0	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	29,905.52	23	\$17,874.70	3%	at stock turnover	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,840.75	10	\$2,426.53	15%	45%	\$0.04	0	0	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	9,792.52	4	\$1,558.03	15%	50%	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,383.01	15	\$1,132.10	15%	60%	\$0.07	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$31,152.91	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	180.30	15	\$61,781.39	20%	50%	\$0.18	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	587.99	5	\$100.58	15%	25%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	19.92	10	\$20.12	33%	60%	\$0.09	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	3,106.60	10	\$1,614.91	15%	30%	\$0.05	1	1	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	421.74	15	\$87.22	100%	at stock turnover	\$0.00	4	4	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	33.56	15	\$22.34	100%	at stock turnover	\$0.02	2	3	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	29.31	15	\$13.51	100%	at stock turnover	\$0.03	2	5	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	170.15	3	\$1,008.62	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	58.28	10	\$4,675.47	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	140.40	15	\$46,965.56	20%	50%	\$0.15	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	470.95	5	\$100.58	15%	25%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	16.19	10	\$12.49	44%	60%	\$0.06	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	2,482.10	10	\$1,607.97	15%	30%	\$0.06	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	421.74	15	\$87.22	100%	at stock turnover	\$0.00	1	2	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	33.56	15	\$22.34	100%	at stock turnover	\$0.02	1	1	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	29.31	15	\$13.51	100%	at stock turnover	\$0.03	1	2	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	136.28	3	\$774.85	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	11.38	32	\$12,965.75	15%	52%	\$0.32	0	0	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	11,188.49	23	\$95,882.90	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$41,189.90	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	Existing	32,174.40	15	\$61,781.39	20%	50%	\$0.18	2	2	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	5,235.49	23	\$74,106.02	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	5,477.99	18	\$26,954.70	15%	75%	\$0.10	0	0	AEG research & analysis
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	4,578.19	18	\$3,597.47	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	129,854.56	45	\$266,374.05	15%	25%	\$0.16	2	2	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,060.57	20	\$4,684.49	15%	25%	\$0.08	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	48,825.89	45	\$34,998.72	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	28,277.68	3	\$1,008.62	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,158.46	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	9,771.30	10	\$4,675.47	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	12,654.78	23	\$78,066.79	2%	at stock turnover	\$0.17	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$26,757.69	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	New	30,217.42	15	\$46,965.56	20%	50%	\$0.15	1	1	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	9,423.89	23	\$51,964.29	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,458.19	18	\$18,150.39	15%	75%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	3,656.02	18	\$2,920.43	15%	25%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	92,561.19	45	\$109,332.42	15%	25%	\$0.10	1	1	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	2,630.11	20	\$4,910.63	15%	25%	\$0.08	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	8,777.09	45	\$5,100.01	45%	50%	\$0.05	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	26,602.29	3	\$774.85	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,107.73	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	2,447.84	32	\$12,965.75	15%	52%	\$0.32	0	0	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	1,070.65	15	\$61,781.39	20%	50%	\$0.18	0	1	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	846.19	15	\$175.01	100%	at stock turnover	\$0.01	30	33	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	4,367.57	5	\$855.32	5%	40%	\$0.03	1	2	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	5,638.59	5	\$1,140.43	15%	50%	\$0.03	1	2	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	6,680.70	12	\$7,067.31	3%	25%	\$0.09	2	5	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	1,148.89	16	\$130.41	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	7,395.95	10	\$3,763.27	7%	60%	\$0.05	5	9	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$85,323.83	15%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	2,550.05	8	\$611.14	7%	15%	\$0.03	0	1	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	487.86	5	\$48.56	10%	25%	\$0.01	0	0	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	47.91	15	\$31.89	100%	at stock turnover	\$0.02	18	19	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	80.21	15	\$36.98	100%	at stock turnover	\$0.03	5	9	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	1,108.24	3	\$1,008.62	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	370.00	10	\$4,675.47	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	881.32	15	\$46,965.56	20%	50%	\$0.15	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	846.19	15	\$175.01	100%	at stock turnover	\$0.00	11	13	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	3,301.65	5	\$853.93	5%	40%	\$0.04	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	4,659.89	5	\$1,139.04	15%	50%	\$0.04	0	0	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	5,554.43	12	\$6,644.85	4%	25%	\$0.09	1	1	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	954.60	16	\$129.72	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	6,093.73	10	\$3,593.31	22%	60%	\$0.05	1	1	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$85,323.83	18%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	2,118.29	8	\$594.49	7%	15%	\$0.03	0	0	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	395.65	5	\$47.86	10%	25%	\$0.01	0	0	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	47.91	15	\$31.89	100%	at stock turnover	\$0.02	7	8	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	80.21	15	\$36.98	100%	at stock turnover	\$0.03	2	3	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	920.81	3	\$774.85	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	71.43	32	\$12,965.75	15%	52%	\$0.32	0	0	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$346.84	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,552.54	3	\$1,690.52	5%	39%	\$0.07	1	1	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,217.47	3	\$1,008.62	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	766.24	10	\$4,675.47	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$346.84	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	2,554.15	3	\$1,690.52	5%	39%	\$0.07	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,217.47	3	\$774.85	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	206.57	32	\$12,965.75	15%	52%	\$0.32	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	1,806.26	10	\$54.80	15%	75%	\$0.00	1	1	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	1,965.04	15	\$798.44	15%	50%	\$0.04	1	1	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	471.88	15	\$154.69	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	55.22	5	\$9.71	15%	50%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	862.79	20	\$663.17	15%	50%	\$0.07	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	472.50	15	\$155.39	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	952.28	10	\$345.46	15%	50%	\$0.05	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$5,202.67	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	768.75	15	\$365.57	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	452.07	3	\$38.85	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	1,212.25	15	\$585.47	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,387.38	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	8,028.04	10	\$696.46	8%	38%	\$0.01	2	2	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	2,703.15	15	\$203.25	8%	38%	\$0.01	1	1	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,384.36	3	\$57.58	8%	38%	\$0.01	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	4,131.12	10	\$520.27	8%	38%	\$0.02	1	1	6th Plan
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	554.36	8	\$772.08	10%	50%	\$0.23	1	1	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	393.32	8	\$274.01	5%	25%	\$0.12	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$2,181.65	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$756.82	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$2.77	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	9,742.97	17	\$696.46	5%	6%	\$0.01	0	0	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,546.76	10	\$327.42	15%	36%	\$0.03	1	1	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	9,635.83	17	\$3,771.59	25%	44%	\$0.04	6	6	RSMMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,014.17	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$490.44	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$480.03	8%	38%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$584.78	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$166.49	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$1,624.62	8%	38%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	3,795.83	3	\$1,690.52	5%	39%	\$0.07	4	4	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	3,383.48	3	\$1,008.62	0%	5%	\$0.01	1	1	BEST Simulation
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$284.41	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	1,142.41	10	\$4,675.47	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$1,037.76	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	New	3,449.60	3	\$1,690.52	5%	39%	\$0.07	2	2	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	1,806.26	10	\$54.80	15%	75%	\$0.00	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	1,908.42	15	\$798.44	15%	50%	\$0.04	0	0	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	454.95	15	\$154.69	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	53.09	5	\$9.71	15%	50%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	818.07	20	\$663.17	15%	50%	\$0.07	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	454.89	15	\$155.39	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	916.07	10	\$345.46	15%	50%	\$0.05	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$5,202.67	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	735.78	15	\$365.57	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	436.93	3	\$38.85	8%	38%	\$0.03	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	1,156.12	15	\$585.47	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,387.38	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	7,958.53	10	\$696.46	8%	38%	\$0.01	1	1	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	New	2,704.66	15	\$203.25	8%	38%	\$0.01	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	1,337.82	3	\$57.58	8%	38%	\$0.01	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	3,974.72	10	\$520.27	8%	38%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	500.56	8	\$772.08	10%	50%	\$0.25	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	355.23	8	\$274.01	5%	25%	\$0.13	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$2,181.65	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$756.82	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$2.77	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	9,051.05	17	\$696.46	5%	6%	\$0.01	0	0	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,396.92	10	\$327.42	15%	36%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	8,915.83	17	\$2,262.82	25%	44%	\$0.03	3	3	RSMMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,014.17	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$490.44	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	3,757.82	10	\$480.03	8%	38%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	3,827.35	15	\$584.78	8%	38%	\$0.02	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,930.14	3	\$166.49	8%	38%	\$0.03	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	5,953.23	12	\$1,624.62	8%	38%	\$0.03	1	1	6th Plan
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	3,148.88	3	\$774.85	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$284.41	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	278.10	32	\$12,965.75	15%	52%	\$0.32	0	0	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$1,037.76	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$223.37	0%	0%	\$10.00	0	0	PA - TRM
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$36.07	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$170.65	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$203.25	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$31,875.04	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$130.41	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$6,291.07	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$698.55	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$6,393.74	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$88.79	0%	0%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$121.40	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$713.11	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$24,438.69	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,372.42	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$40.93	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$4,837.79	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$17,822.97	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	312.95	5	\$84.63	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	3,097.49	10	\$1,693.99	15%	75%	\$0.08	2	2	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,247.18	5	\$1,726.59	15%	75%	\$0.33	3	3	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,482.21	15	\$728.37	15%	50%	\$0.06	0	0	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	2,923.66	18	\$1,748.79	15%	50%	\$0.06	1	1	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	1,026.31	3	\$97.12	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	3,048.63	15	\$1,457.44	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	519.99	3	\$1,690.52	5%	39%	\$0.07	4	1	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	1,847.67	3	\$1,008.62	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	637.75	10	\$4,675.47	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$223.37	0%	0%	\$10.00	0	0	PA - TRM
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$36.07	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$170.65	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$203.25	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	New	649.72	3	\$1,690.52	5%	39%	\$0.07	1	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$31,875.04	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$130.41	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$6,291.07	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$698.55	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$6,393.74	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$88.79	0%	0%	\$10.00	0	0	MT - IRP 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$121.40	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$713.11	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$24,438.69	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,372.42	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$40.93	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$4,837.79	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$17,822.97	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	313.15	5	\$84.63	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	3,073.55	10	\$1,693.99	15%	75%	\$0.08	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	1,352.20	5	\$1,726.59	15%	75%	\$0.30	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,470.48	15	\$728.37	15%	50%	\$0.06	0	0	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	2,891.22	18	\$1,748.79	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	1,026.31	3	\$97.12	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	3,044.13	15	\$1,457.44	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	New	2,031.14	3	\$774.85	0%	5%	\$0.01	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	182.12	32	\$12,965.75	15%	52%	\$0.32	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$41,189.90	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	810.83	3	\$1,008.62	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	279.81	10	\$4,675.47	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	297.00	15	\$63.82	15%	35%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	10,299.52	20	\$11,437.59	100%	at stock turnover	\$0.11	1	1	BEST Simulation
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$26,757.69	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	260.12	3	\$774.85	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	24.51	32	\$12,965.75	15%	52%	\$0.32	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	95.28	15	\$26.36	15%	35%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	5,506.59	20	\$6,868.23	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	31,395.57	23	\$65,406.61	2%	at stock turnover	\$0.16	2	2	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	17,209.37	23	\$9,889.67	6%	at stock turnover	\$0.06	2	2	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	5,496.65	10	\$1,531.39	15%	45%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,586.28	15	\$1,024.94	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	414.81	15	\$360.03	15%	75%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	15,254.79	15	\$178,609.35	15%	50%	\$1.18	3	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,480.20	12	\$24,756.28	15%	50%	\$0.22	3	3	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	Existing	3,990.39	15	\$37,525.44	20%	50%	\$0.17	1	1	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	30,293.34	23	\$58,914.68	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	Existing	12,786.09	18	\$16,200.38	15%	75%	\$0.10	1	1	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	779.06	18	\$2,162.24	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	Existing	5,429.95	10	\$8,271.69	18%	30%	\$0.07	1	0	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,526.04	45	\$160,098.04	15%	25%	\$0.16	1	1	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,374.67	20	\$2,815.34	15%	25%	\$0.08	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	95.02	45	\$21,034.95	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	RTU - EER 12.0	per Facility	Existing	24,585.97	23	\$67,108.64	4%	at stock turnover	\$0.28	1	1	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	Existing	3,638.40	3	\$1,131.18	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$473.99	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	Existing	1,240.01	10	\$5,342.16	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	28,108.39	23	\$14,963.49	3%	at stock turnover	\$0.06	2	2	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,899.51	10	\$2,287.78	15%	45%	\$0.04	0	0	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	11,121.84	4	\$1,456.02	15%	50%	\$0.03	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,218.55	15	\$1,474.87	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	402.13	15	\$365.48	15%	75%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	22,579.59	23	\$45,863.95	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,232.75	23	\$224,841.63	6%	at stock turnover	\$18.99	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,769.86	10	\$1,859.19	15%	45%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,117.62	15	\$714.62	15%	60%	\$0.07	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$6,732.36	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	6,726.89	15	\$178,609.35	15%	50%	\$2.53	1	1	BEST Simulation
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	New	7,342.69	12	\$16,082.33	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	New	2,185.90	15	\$28,618.81	20%	50%	\$0.15	0	0	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	21,795.77	23	\$41,311.73	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	New	7,695.30	18	\$10,908.61	15%	75%	\$0.11	0	0	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	802.30	18	\$1,755.45	15%	25%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	New	2,914.37	10	\$4,949.67	18%	30%	\$0.08	0	0	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	New	-50.95	45	\$65,711.80	15%	25%	\$0.10	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	New	2,092.10	20	\$2,951.55	15%	25%	\$0.08	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-46.18	45	\$3,065.28	45%	50%	\$0.05	0	0	BEST Simulation
Wastewater	Cooling	RTU - EER 12.0	per Facility	New	13,800.05	23	\$36,676.99	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	New	2,018.97	3	\$989.98	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,271.24	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	New	168.65	32	\$16,573.12	15%	52%	\$0.61	0	0	6th Plan
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	17,974.03	23	\$10,743.18	3%	at stock turnover	\$0.06	1	1	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,111.48	10	\$1,458.29	15%	45%	\$0.04	0	0	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,885.57	4	\$936.63	15%	50%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	831.23	15	\$680.57	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$12,743.28	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Exterior Lighting	Energy Management System	per Facility	Existing	138.70	15	\$37,525.44	20%	50%	\$0.17	0	1	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	452.33	5	\$77.64	15%	25%	\$0.03	0	1	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	15.33	10	\$15.66	33%	60%	\$0.09	0	0	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,389.83	10	\$1,242.18	15%	30%	\$0.05	3	6	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	324.44	15	\$67.10	100%	at stock turnover	\$0.00	13	15	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	25.82	15	\$17.18	100%	at stock turnover	\$0.02	9	9	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	22.55	15	\$10.40	100%	at stock turnover	\$0.03	9	17	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	Existing	130.90	3	\$1,131.18	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	44.83	10	\$5,342.16	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Exterior Lighting	Energy Management System	per Facility	New	108.01	15	\$28,618.81	20%	50%	\$0.15	0	0	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	362.29	5	\$77.41	15%	25%	\$0.03	0	0	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	12.46	10	\$9.53	44%	60%	\$0.06	0	0	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,909.42	10	\$1,236.74	15%	30%	\$0.06	1	1	AEG research & analysis
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	324.44	15	\$67.10	100%	at stock turnover	\$0.00	5	6	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	25.82	15	\$17.18	100%	at stock turnover	\$0.02	3	4	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	22.55	15	\$10.40	100%	at stock turnover	\$0.03	3	6	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	New	104.84	3	\$989.98	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.75	32	\$16,573.12	15%	52%	\$0.61	0	0	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,724.59	23	\$57,628.24	2%	at stock turnover	\$0.16	0	0	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$24,756.28	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	Existing	19,337.69	15	\$37,525.44	20%	50%	\$0.17	5	5	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,146.67	23	\$44,539.73	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	Existing	3,292.42	18	\$16,200.38	15%	75%	\$0.10	0	0	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,751.62	18	\$2,162.24	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	Existing	78,046.13	45	\$160,098.04	15%	25%	\$0.16	6	6	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,238.46	20	\$2,815.34	15%	25%	\$0.08	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	29,345.69	45	\$21,034.95	45%	50%	\$0.06	1	1	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	Existing	16,995.66	3	\$1,131.18	0%	5%	\$0.01	1	1	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$473.99	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Heating	Transformer - High Efficiency	per Facility	Existing	5,872.82	10	\$5,342.16	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,605.87	23	\$46,920.27	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$16,082.33	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	New	18,161.49	15	\$28,618.81	20%	50%	\$0.15	2	2	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,664.01	23	\$31,231.95	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	New	1,477.44	18	\$10,908.61	15%	75%	\$0.11	0	0	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	2,197.37	18	\$1,755.45	15%	25%	\$0.06	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	New	55,631.80	45	\$65,711.80	15%	25%	\$0.10	2	2	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	New	1,580.77	20	\$2,951.55	15%	25%	\$0.08	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,275.27	45	\$3,065.28	45%	50%	\$0.05	0	0	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	New	15,988.70	3	\$989.98	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,271.24	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Heating	Transformer - High Efficiency	per Facility	New	1,471.22	32	\$16,573.12	15%	52%	\$0.61	0	0	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	Existing	823.62	15	\$37,525.44	20%	50%	\$0.17	2	3	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	650.95	15	\$134.63	100%	at stock turnover	\$0.01	112	126	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	3,359.86	5	\$657.87	5%	40%	\$0.03	3	6	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	4,337.62	5	\$877.16	15%	50%	\$0.03	4	8	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	5,139.30	12	\$5,436.82	3%	25%	\$0.09	9	17	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	883.81	16	\$100.11	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,689.52	10	\$2,895.02	7%	60%	\$0.05	17	33	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$27,921.90	15%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,961.69	8	\$469.91	7%	15%	\$0.03	1	2	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	375.30	5	\$37.23	10%	25%	\$0.01	0	0	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	36.85	15	\$24.53	100%	at stock turnover	\$0.02	67	73	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	61.70	15	\$28.45	100%	at stock turnover	\$0.03	17	34	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	Existing	852.54	3	\$1,131.18	0%	5%	\$0.01	0	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	284.63	10	\$5,342.16	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	New	677.98	15	\$28,618.81	20%	50%	\$0.15	1	1	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	650.95	15	\$134.63	100%	at stock turnover	\$0.00	43	48	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,539.88	5	\$657.19	5%	40%	\$0.04	1	1	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	3,584.73	5	\$876.25	15%	50%	\$0.04	1	2	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,272.89	12	\$5,111.52	4%	25%	\$0.09	3	4	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	735.60	16	\$99.66	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,687.76	10	\$2,764.27	22%	60%	\$0.05	3	5	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$27,921.90	18%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,629.54	8	\$457.42	7%	15%	\$0.03	0	1	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	304.36	5	\$37.00	10%	25%	\$0.01	0	0	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	36.85	15	\$24.53	100%	at stock turnover	\$0.02	26	29	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	61.70	15	\$28.45	100%	at stock turnover	\$0.03	7	13	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	New	707.86	3	\$989.98	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	New	54.95	32	\$16,573.12	15%	52%	\$0.61	0	0	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$141.88	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	Existing	2,950.35	3	\$6,158.25	5%	39%	\$0.08	8	8	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,563.06	3	\$1,131.18	0%	5%	\$0.01	1	1	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	885.66	10	\$5,342.16	15%	24%	\$0.05	1	1	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$141.88	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	New	2,952.20	3	\$6,158.25	5%	39%	\$0.28	3	3	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	New	2,563.06	3	\$989.98	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	New	238.76	32	\$16,573.12	15%	52%	\$0.61	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	4,056.34	10	\$123.49	15%	75%	\$0.00	10	10	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,459.37	15	\$1,793.58	15%	50%	\$0.04	6	7	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,059.71	15	\$346.64	15%	38%	\$0.04	1	1	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	124.01	5	\$21.34	15%	50%	\$0.04	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,937.56	20	\$1,489.39	15%	50%	\$0.07	3	3	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,061.10	15	\$349.14	15%	38%	\$0.04	1	1	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	2,162.18	10	\$775.23	15%	50%	\$0.05	3	3	VT - TRM
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,128.19	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	Existing	1,687.54	15	\$821.31	8%	38%	\$0.05	2	2	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,015.22	3	\$87.62	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,763.90	15	\$1,314.15	8%	38%	\$0.05	3	4	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$567.52	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	280,903.02	10	\$24,377.86	8%	38%	\$0.01	348	352	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	Existing	94,802.43	15	\$7,110.10	8%	38%	\$0.01	119	119	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	Existing	48,439.06	3	\$2,022.41	8%	38%	\$0.01	58	61	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	144,548.86	10	\$18,202.13	8%	38%	\$0.02	173	181	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,674.85	8	\$4,162.41	10%	50%	\$0.25	21	23	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,897.84	8	\$1,475.77	5%	25%	\$0.13	7	8	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$892.37	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,586.33	0%	0%	\$10.00	0	0	6th Plan

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Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$6.13	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	48,721.10	17	\$3,754.47	5%	6%	\$0.01	10	10	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	7,473.23	10	\$1,763.85	15%	36%	\$0.03	31	33	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	Existing	46,327.07	17	\$20,329.87	25%	44%	\$0.05	175	184	RSMMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,125.70	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,027.66	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	38,031.80	10	\$4,813.24	8%	38%	\$0.02	47	48	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	Existing	38,417.44	15	\$5,868.37	8%	38%	\$0.02	48	48	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	Existing	20,080.64	3	\$1,669.18	8%	38%	\$0.03	25	25	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	62,246.27	12	\$16,300.94	8%	38%	\$0.03	76	78	6th Plan
Wastewater	Motors	Retrocommissioning	per Facility	Existing	18,313.55	3	\$6,158.25	5%	39%	\$0.08	122	130	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	Existing	16,880.58	3	\$1,131.18	0%	5%	\$0.01	17	18	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$596.35	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	Existing	5,498.74	10	\$5,342.16	15%	24%	\$0.05	10	11	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$507.82	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Commissioning	per Facility	New	1,887.74	3	\$6,158.25	5%	39%	\$0.28	1	1	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$123.49	15%	75%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$1,793.58	15%	50%	\$10.00	0	0	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$346.64	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$21.34	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,489.39	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$349.14	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$775.23	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,128.19	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$821.31	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$87.62	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$1,314.15	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$567.52	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$24,377.86	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	New	0.00	15	\$7,110.10	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$2,022.41	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$18,202.13	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	267.42	8	\$4,162.41	10%	50%	\$2.60	0	0	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	189.78	8	\$1,475.77	5%	25%	\$1.30	0	0	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$892.37	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,586.33	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$6.13	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,724.12	17	\$3,754.47	5%	6%	\$0.09	0	0	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	730.46	10	\$1,763.85	15%	36%	\$0.35	0	0	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	New	4,654.57	17	\$12,198.01	25%	44%	\$0.29	1	1	RSMans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,125.70	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,027.66	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$4,813.24	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$5,868.37	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$1,669.18	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$16,300.94	8%	38%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	New	1,640.56	3	\$989.98	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$596.35	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	New	149.24	32	\$16,573.12	15%	52%	\$0.61	0	0	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$507.82	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$2,243.74	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$153.46	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$722.56	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$861.72	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$13,038.85	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$552.08	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$26,635.22	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,957.45	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$27,070.17	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$45.17	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$49.49	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	Existing	0.00	10	\$291.70	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$9,996.95	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,746.53	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$64.02	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,457.35	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$28,147.09	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	Existing	998.59	5	\$270.37	15%	75%	\$0.07	2	2	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	9,959.19	10	\$5,405.27	15%	75%	\$0.08	25	25	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	Existing	2,885.99	5	\$2,727.27	15%	75%	\$0.22	7	7	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,676.90	15%	50%	\$10.00	0	0	Developed from RTF
Wastewater	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$4,024.39	15%	50%	\$10.00	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

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Wastewater	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$223.60	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$3,353.58	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	Existing	4,846.41	3	\$6,158.25	5%	39%	\$0.08	7	7	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	Existing	4,337.54	3	\$1,131.18	0%	5%	\$0.01	1	1	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	Existing	1,498.83	10	\$5,342.16	15%	24%	\$0.05	1	1	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$2,243.74	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$153.46	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$722.56	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$861.72	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	New	875.88	3	\$6,158.25	5%	39%	\$0.28	11	5	Energy Management Program Design for PC
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$13,038.85	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$552.08	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$26,635.22	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,957.45	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$27,070.17	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$45.17	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$49.49	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	New	0.00	10	\$291.70	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	New	0.00	10	\$9,996.95	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,746.53	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$64.02	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,457.35	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$28,147.09	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	New	999.22	5	\$270.37	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	9,943.78	10	\$5,405.27	15%	75%	\$0.08	9	9	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	New	1,915.94	5	\$2,727.27	15%	75%	\$0.33	8	8	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	3,383.88	15	\$1,676.90	15%	50%	\$0.06	2	2	Developed from RTF

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Wastewater	Process	Refrigeration - System Controls	per Facility	New	6,653.29	18	\$4,024.39	15%	50%	\$0.06	3	3	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Maintenance	per Facility	New	2,361.76	3	\$223.60	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	7,005.19	15	\$3,353.58	15%	50%	\$0.06	4	4	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	New	2,917.95	3	\$989.98	0%	5%	\$0.01	1	1	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	New	258.05	32	\$16,573.12	15%	52%	\$0.61	1	1	6th Plan
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$24,756.28	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	Existing	487.33	3	\$1,131.18	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	Existing	168.18	10	\$5,342.16	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	178.50	15	\$38.59	15%	35%	\$0.02	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,190.29	20	\$6,874.30	100%	at stock turnover	\$0.11	3	3	BEST Simulation
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$16,082.33	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	New	156.34	3	\$989.98	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	New	14.73	32	\$16,573.12	15%	52%	\$0.61	0	0	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	57.26	15	\$15.89	15%	35%	\$0.03	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,309.61	20	\$4,127.99	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	18,160.82	23	\$37,834.55	2%	at stock turnover	\$0.16	3	3	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	9,954.78	23	\$5,720.69	6%	at stock turnover	\$0.06	4	4	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	3,179.55	10	\$885.61	15%	45%	\$0.04	1	1	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	917.58	15	\$593.08	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	239.95	15	\$207.98	15%	75%	\$0.09	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	8,824.15	15	\$449,549.41	15%	50%	\$5.13	5	5	BEST Simulation
Water	Cooling	Destratification Fans (HVLS)	per Facility	Existing	7,797.64	12	\$14,320.10	15%	50%	\$0.22	4	5	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	Existing	2,308.25	15	\$21,706.70	20%	50%	\$0.17	1	1	BEST Simulation

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Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	17,523.22	23	\$34,079.28	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	Existing	7,396.13	18	\$9,370.95	15%	75%	\$0.10	1	1	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	450.65	18	\$1,250.72	15%	25%	\$0.07	0	0	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	Existing	3,140.96	10	\$4,784.60	18%	30%	\$0.07	1	0	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	6,088.80	45	\$92,609.01	15%	25%	\$0.16	1	1	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	Existing	1,373.63	20	\$1,628.39	15%	25%	\$0.08	0	0	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	54.97	45	\$12,167.77	45%	50%	\$0.06	0	0	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	Existing	14,221.79	23	\$38,819.09	4%	at stock turnover	\$0.28	1	1	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	Existing	2,104.64	3	\$663.35	0%	5%	\$0.01	0	0	BEST Simulation
Water	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,193.01	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	Existing	717.29	10	\$3,133.36	15%	24%	\$0.05	0	0	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	16,259.34	23	\$8,655.65	3%	at stock turnover	\$0.06	3	3	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	4,569.49	10	\$1,322.71	15%	45%	\$0.04	0	0	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	6,433.45	4	\$842.19	15%	50%	\$0.03	1	1	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	1	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,283.32	15	\$853.05	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	232.61	15	\$211.40	15%	75%	\$0.09	0	0	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	13,061.19	23	\$26,530.07	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	6,180.39	23	\$24,070.97	6%	at stock turnover	\$0.41	1	1	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,456.67	10	\$1,075.31	15%	45%	\$0.04	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	570.74	15	\$413.10	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$16,944.95	15%	75%	\$10.00	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	3,707.94	15	\$449,549.41	15%	50%	\$11.02	1	1	BEST Simulation

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Water	Cooling	Destratification Fans (HVLS)	per Facility	New	4,046.98	12	\$9,302.95	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	New	1,204.75	15	\$16,554.71	20%	50%	\$0.15	0	0	BEST Simulation
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	12,607.79	23	\$23,896.83	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	New	4,451.36	18	\$6,310.15	15%	75%	\$0.11	0	0	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	442.28	18	\$1,015.31	15%	25%	\$0.06	0	0	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	New	1,589.68	10	\$2,863.11	18%	30%	\$0.08	0	0	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	New	-28.10	45	\$38,011.15	15%	25%	\$0.10	0	0	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	New	1,153.77	20	\$1,707.24	15%	25%	\$0.08	0	0	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-25.46	45	\$1,772.94	45%	50%	\$0.05	0	0	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	New	7,982.66	23	\$21,215.86	4%	at stock turnover	\$0.28	0	0	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	New	1,112.44	3	\$581.65	0%	5%	\$0.01	0	0	BEST Simulation
Water	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,199.64	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	New	92.96	32	\$9,736.62	15%	52%	\$0.66	0	0	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	10,397.10	23	\$6,214.41	3%	at stock turnover	\$0.06	1	1	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,378.29	10	\$843.33	15%	45%	\$0.04	0	0	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	3,404.52	4	\$541.65	15%	50%	\$0.04	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	1	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	480.82	15	\$393.67	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$32,074.10	15%	75%	\$10.00	0	0	BEST Simulation
Water	Exterior Lighting	Energy Management System	per Facility	Existing	80.23	15	\$21,706.70	20%	50%	\$0.17	0	1	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	261.65	5	\$45.14	15%	25%	\$0.03	1	1	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	8.87	10	\$9.14	33%	60%	\$0.09	0	0	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,382.40	10	\$718.78	15%	30%	\$0.05	4	9	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	187.67	15	\$38.81	100%	at stock turnover	\$0.00	21	23	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	14.93	15	\$9.94	100%	at stock turnover	\$0.02	14	15	AEO 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	13.04	15	\$6.01	100%	at stock turnover	\$0.03	14	27	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	Existing	75.72	3	\$663.35	0%	5%	\$0.01	0	0	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	25.93	10	\$3,133.36	15%	24%	\$0.05	0	0	6th Plan
Water	Exterior Lighting	Energy Management System	per Facility	New	62.48	15	\$16,554.71	20%	50%	\$0.15	0	0	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	209.57	5	\$44.57	15%	25%	\$0.03	0	0	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	7.21	10	\$5.71	44%	60%	\$0.06	0	0	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,104.51	10	\$715.35	15%	30%	\$0.06	1	2	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	187.67	15	\$38.81	100%	at stock turnover	\$0.00	8	9	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	14.93	15	\$9.94	100%	at stock turnover	\$0.02	5	6	AEO 2013
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	13.04	15	\$6.01	100%	at stock turnover	\$0.03	5	10	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	New	60.65	3	\$581.65	0%	5%	\$0.01	0	0	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	New	5.06	32	\$9,736.62	15%	52%	\$0.66	0	0	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	3,889.85	23	\$33,335.14	2%	at stock turnover	\$0.16	1	1	BEST Simulation
Water	Heating	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$14,320.10	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	Existing	11,185.92	15	\$21,706.70	20%	50%	\$0.17	7	7	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,820.20	23	\$25,764.07	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	Existing	1,904.51	18	\$9,370.95	15%	75%	\$0.10	0	0	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,591.68	18	\$1,250.72	15%	25%	\$0.07	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	Existing	45,145.89	45	\$92,609.01	15%	25%	\$0.16	10	10	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	Existing	716.39	20	\$1,628.39	15%	25%	\$0.08	0	0	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	16,975.06	45	\$12,167.77	45%	50%	\$0.06	2	2	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	Existing	9,831.16	3	\$663.35	0%	5%	\$0.01	1	1	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$1,193.01	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	Existing	3,397.14	10	\$3,133.36	15%	24%	\$0.05	1	1	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	4,399.62	23	\$27,141.10	2%	at stock turnover	\$0.17	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$9,302.95	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	New	10,505.54	15	\$16,554.71	20%	50%	\$0.15	2	2	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	3,276.36	23	\$18,066.17	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	New	854.63	18	\$6,310.15	15%	75%	\$0.11	0	0	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,271.07	18	\$1,015.31	15%	25%	\$0.06	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	New	32,180.29	45	\$38,011.15	15%	25%	\$0.10	3	3	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	New	914.40	20	\$1,707.24	15%	25%	\$0.08	0	0	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	New	3,051.49	45	\$1,772.94	45%	50%	\$0.05	0	0	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	New	9,248.69	3	\$581.65	0%	5%	\$0.01	0	0	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$3,199.64	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	New	851.03	32	\$9,736.62	15%	52%	\$0.66	0	0	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	Existing	476.43	15	\$21,706.70	20%	50%	\$0.17	3	5	BEST Simulation
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	376.54	15	\$77.88	100%	at stock turnover	\$0.01	176	198	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	1,861.27	5	\$380.53	5%	40%	\$0.03	5	9	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	2,591.35	5	\$507.37	15%	50%	\$0.03	7	12	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	2,972.83	12	\$3,144.79	3%	25%	\$0.09	13	27	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	511.24	16	\$57.71	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	3,291.11	10	\$1,674.67	7%	60%	\$0.05	28	52	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$70,277.81	15%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,134.74	8	\$271.97	7%	15%	\$0.03	2	4	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	217.09	5	\$21.71	10%	25%	\$0.01	0	1	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	21.32	15	\$14.19	100%	at stock turnover	\$0.02	105	115	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	35.69	15	\$16.46	100%	at stock turnover	\$0.03	27	54	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	Existing	493.15	3	\$663.35	0%	5%	\$0.01	1	1	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	164.65	10	\$3,133.36	15%	24%	\$0.05	0	1	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	New	392.18	15	\$16,554.71	20%	50%	\$0.15	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	376.54	15	\$77.88	100%	at stock turnover	\$0.00	68	76	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,555.20	5	\$379.96	5%	40%	\$0.04	2	2	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	1,987.59	5	\$506.80	15%	50%	\$0.04	2	3	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	2,471.66	12	\$2,956.81	4%	25%	\$0.09	4	6	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	425.51	16	\$57.71	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	2,711.64	10	\$1,599.25	22%	60%	\$0.05	5	7	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$70,277.81	18%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	942.61	8	\$264.54	7%	15%	\$0.03	1	1	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	176.06	5	\$21.71	10%	25%	\$0.02	0	0	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	21.32	15	\$14.19	100%	at stock turnover	\$0.02	41	45	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	35.69	15	\$16.46	100%	at stock turnover	\$0.03	11	20	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	New	409.46	3	\$581.65	0%	5%	\$0.01	0	0	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	New	31.78	32	\$9,736.62	15%	52%	\$0.66	0	0	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$357.10	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	Existing	1,706.63	3	\$3,647.59	5%	39%	\$0.07	13	13	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,482.60	3	\$663.35	0%	5%	\$0.01	2	2	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	512.31	10	\$3,133.36	15%	24%	\$0.05	1	1	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$357.10	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	New	1,707.70	3	\$3,647.59	5%	39%	\$0.36	4	4	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	New	1,482.60	3	\$581.65	0%	5%	\$0.01	1	1	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	New	138.11	32	\$9,736.62	15%	52%	\$0.66	0	0	6th Plan
Water	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	2,346.39	10	\$71.42	15%	75%	\$0.00	16	16	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	2,552.65	15	\$1,037.60	15%	50%	\$0.04	10	10	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	612.99	15	\$200.55	15%	38%	\$0.04	2	2	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	70.99	5	\$12.57	15%	50%	\$0.04	0	0	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,120.79	20	\$861.62	15%	50%	\$0.07	4	5	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	613.80	15	\$202.26	15%	38%	\$0.04	2	2	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,237.04	10	\$448.52	15%	50%	\$0.05	5	5	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$5,356.54	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	Existing	975.57	15	\$475.38	8%	38%	\$0.05	3	4	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Maintenance	per Facility	Existing	585.65	3	\$50.85	8%	38%	\$0.03	2	2	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	1,597.81	15	\$760.49	8%	38%	\$0.05	5	6	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$1,428.41	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$659.93	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	Existing	0.00	15	\$192.55	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	Existing	0.00	3	\$54.85	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	0.00	10	\$492.52	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,955.09	8	\$2,480.29	10%	50%	\$0.21	34	36	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,387.16	8	\$879.33	5%	25%	\$0.10	12	13	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$2,246.03	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$21.71	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$0.00	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	35,457.91	17	\$2,237.46	5%	6%	\$0.01	16	16	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	5,553.44	10	\$1,051.31	15%	36%	\$0.03	52	54	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	Existing	33,890.73	17	\$12,114.07	25%	44%	\$0.04	282	293	RSMeans 2013
Water	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$29.14	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$14.28	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	79,473.85	10	\$10,058.30	8%	38%	\$0.02	268	271	6th Plan
Water	Motors	Pumping System - Controls	per Facility	Existing	80,279.71	15	\$12,263.19	8%	38%	\$0.02	274	274	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	Existing	41,846.25	3	\$3,488.18	8%	38%	\$0.03	140	143	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	130,074.08	12	\$34,063.60	8%	38%	\$0.03	433	443	6th Plan
Water	Motors	Retrocommissioning	per Facility	Existing	13,386.00	3	\$3,647.59	5%	39%	\$0.07	197	207	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	Existing	12,285.22	3	\$663.35	0%	5%	\$0.01	28	28	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$8.00	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	Existing	4,022.12	10	\$3,133.36	15%	24%	\$0.05	16	17	6th Plan
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$195.98	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Commissioning	per Facility	New	26.03	3	\$3,647.59	5%	39%	\$0.36	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$71.42	15%	75%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$1,037.60	15%	50%	\$10.00	0	0	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$200.55	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$12.57	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$861.62	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$202.26	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$448.52	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$5,356.54	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$475.38	8%	38%	\$10.00	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$50.85	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$760.49	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$1,428.41	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$659.93	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	New	0.00	15	\$192.55	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$54.85	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$492.52	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	3.68	8	\$2,480.29	10%	50%	\$112.54	0	0	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2.61	8	\$879.33	5%	25%	\$56.27	0	0	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$2,246.03	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$21.71	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$0.00	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	64.09	17	\$2,237.46	5%	6%	\$3.86	0	0	E3T Website
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	10.05	10	\$1,051.31	15%	36%	\$15.07	0	0	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	New	64.03	17	\$7,268.32	25%	44%	\$12.52	0	0	RSMears 2013
Water	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$29.14	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$14.28	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$10,058.30	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$12,263.19	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$3,488.18	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$34,063.60	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	New	22.59	3	\$581.65	0%	5%	\$0.01	0	0	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$8.00	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	New	2.10	32	\$9,736.62	15%	52%	\$0.66	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$195.98	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$4,688.62	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$88.56	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$417.67	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$498.80	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$32,818.02	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$319.39	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$15,407.41	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,710.66	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$15,658.81	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$26.28	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$124.56	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	Existing	0.00	10	\$734.20	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$25,161.74	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,167.18	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$37.14	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,421.55	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$16,281.60	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	Existing	577.64	5	\$156.55	15%	75%	\$0.07	4	4	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	5,717.25	10	\$3,126.51	15%	75%	\$0.08	39	39	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	Existing	1,669.41	5	\$1,577.54	15%	75%	\$0.22	11	11	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$970.18	15%	50%	\$10.00	0	0	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$2,327.74	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$129.13	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$1,939.78	15%	50%	\$10.00	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Retrocommissioning	per Facility	Existing	2,880.45	3	\$3,647.59	5%	39%	\$0.07	11	11	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	Existing	2,509.05	3	\$663.35	0%	5%	\$0.01	1	1	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	Existing	867.00	10	\$3,133.36	15%	24%	\$0.05	1	1	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$4,688.62	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$88.56	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$417.67	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$498.80	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	New	674.98	3	\$3,647.59	5%	39%	\$0.36	15	7	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$32,818.02	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$319.39	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$15,407.41	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,710.66	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$15,658.81	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$26.28	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$124.56	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	New	0.00	10	\$734.20	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	New	0.00	10	\$25,161.74	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,167.18	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$37.14	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,421.55	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$16,281.60	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	New	578.00	5	\$156.55	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	5,751.99	10	\$3,126.51	15%	75%	\$0.08	14	14	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	New	1,155.22	5	\$1,577.54	15%	75%	\$0.32	11	11	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,957.41	15	\$970.18	15%	50%	\$0.06	3	3	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	New	3,848.61	18	\$2,327.74	15%	50%	\$0.06	5	5	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	New	1,366.16	3	\$129.13	15%	50%	\$0.04	2	2	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	4,052.16	15	\$1,939.78	15%	50%	\$0.06	6	6	AEG study for State of New Mexico
Water	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	New	1,739.22	3	\$581.65	0%	5%	\$0.01	1	1	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	New	152.56	32	\$9,736.62	15%	52%	\$0.66	1	1	6th Plan
Water	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$14,320.10	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	Existing	281.90	3	\$663.35	0%	5%	\$0.01	0	0	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	Existing	97.28	10	\$3,133.36	15%	24%	\$0.05	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	103.26	15	\$22.28	15%	35%	\$0.02	0	0	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	3,580.78	20	\$3,976.45	100%	at stock turnover	\$0.11	5	5	BEST Simulation
Water	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$9,302.95	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	New	90.44	3	\$581.65	0%	5%	\$0.01	0	0	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	New	8.52	32	\$9,736.62	15%	52%	\$0.66	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	33.12	15	\$9.14	15%	35%	\$0.03	0	0	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,914.45	20	\$2,387.84	100%	at stock turnover	\$0.13	1	1	BEST Simulation

Wyoming Industrial Measure Assumptions

Table H-15 Table of Wyoming Industrial Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	26,772.06	23	\$68,813.30	2%	at stock turnover	\$0.17	3	3	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	15,329.94	23	\$8,483.93	6%	at stock turnover	\$0.06	4	4	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,885.80	10	\$2,469.98	15%	45%	\$0.04	1	1	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,073.25	15	\$1,330.27	15%	60%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	385.83	15	\$333.48	15%	75%	\$0.09	0	0	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	13,191.74	15	\$238,744.43	15%	50%	\$1.81	5	6	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	Existing	11,656.55	12	\$21,415.99	15%	50%	\$0.22	4	5	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	Existing	3,450.51	15	\$45,488.58	20%	50%	\$0.17	1	1	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	25,838.58	23	\$61,984.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	Existing	10,750.66	18	\$15,449.81	15%	75%	\$0.10	1	1	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	767.83	18	\$1,638.26	15%	25%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	Existing	4,688.17	10	\$10,231.30	18%	30%	\$0.10	1	0	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	7,051.71	45	\$199,562.48	15%	25%	\$0.16	1	1	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,201.95	20	\$3,112.66	15%	25%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-143.44	45	\$27,739.02	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	Existing	20,971.14	23	\$70,603.98	4%	at stock turnover	\$0.35	1	1	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	Existing	3,162.44	3	\$867.22	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$506.74	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	Existing	1,072.76	10	\$4,059.38	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	24,471.23	23	\$12,836.56	3%	at stock turnover	\$0.05	3	3	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	6,888.98	10	\$1,990.85	15%	45%	\$0.04	0	1	DEER
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,293.68	4	\$1,343.01	15%	50%	\$0.03	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,834.71	15	\$1,881.61	15%	60%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	368.91	15	\$331.05	15%	75%	\$0.09	0	0	BEST Simulation
Agriculture	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	20,270.23	23	\$51,567.68	2%	at stock turnover	\$0.15	1	1	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,079.35	23	\$30,787.15	6%	at stock turnover	\$2.97	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,032.95	10	\$1,928.95	15%	45%	\$0.04	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,463.16	15	\$930.04	15%	60%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$7,767.39	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,456.38	15	\$238,744.43	15%	50%	\$3.15	1	1	BEST Simulation
Agriculture	Cooling	Destratification Fans (HVLS)	per Facility	New	6,584.03	12	\$14,153.22	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Agriculture	Cooling	Energy Management System	per Facility	New	1,954.46	15	\$37,729.99	20%	50%	\$0.16	0	0	BEST Simulation
Agriculture	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	19,644.28	23	\$46,449.93	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Cooling	Heat Pump - Maintenance	per Facility	New	7,030.39	18	\$11,349.77	15%	75%	\$0.11	0	0	AEG research & analysis
Agriculture	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	681.99	18	\$587.76	15%	25%	\$0.09	0	0	BEST Simulation
Agriculture	Cooling	HVAC - Economizer	per Facility	New	2,564.56	10	\$6,040.22	18%	30%	\$0.11	0	0	DEER
Agriculture	Cooling	Insulation - Ceiling - R-38	per Facility	New	465.25	45	\$159,574.31	15%	25%	\$0.14	0	0	BEST Simulation
Agriculture	Cooling	Insulation - Ducting - R-8	per Facility	New	1,590.47	20	\$1,681.95	15%	25%	\$0.09	0	0	BEST Simulation
Agriculture	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-58.17	45	\$3,305.34	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Cooling	RTU - EER 12.0	per Facility	New	12,397.76	23	\$41,238.85	4%	at stock turnover	\$0.35	0	0	BEST Simulation
Agriculture	Cooling	Strategic Energy Management	per Facility	New	1,786.60	3	\$739.48	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,359.40	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Cooling	Transformer - High Efficiency	per Facility	New	153.00	32	\$12,376.90	15%	52%	\$0.36	0	0	6th Plan
Agriculture	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	14,989.87	23	\$9,590.29	3%	at stock turnover	\$0.07	1	1	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,513.87	10	\$1,217.69	15%	45%	\$0.04	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,294.19	4	\$829.29	15%	50%	\$0.04	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,502.70	15	\$1,193.42	15%	60%	\$0.07	0	0	BEST Simulation
Agriculture	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$12,024.00	15%	75%	\$10.00	0	0	BEST Simulation
Agriculture	Exterior Lighting	Energy Management System	per Facility	Existing	124.58	15	\$45,488.58	20%	50%	\$0.17	1	1	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	410.59	5	\$76.77	15%	25%	\$0.03	1	1	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.21	10	\$179.94	33%	60%	\$0.11	1	1	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,169.05	10	\$1,228.62	15%	30%	\$0.06	5	10	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	26	26	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	13	13	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	18	36	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	2	6	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$867.22	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.69	10	\$4,059.38	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Exterior Lighting	Energy Management System	per Facility	New	108.74	15	\$37,729.99	20%	50%	\$0.16	0	0	BEST Simulation
Agriculture	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.08	5	\$76.47	15%	25%	\$0.03	0	0	Illinois TRM
Agriculture	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.32	10	\$110.15	44%	60%	\$0.06	0	0	AEG research & analysis
Agriculture	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,887.22	10	\$1,222.85	15%	30%	\$0.06	1	2	AEG research & analysis
Agriculture	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	11	13	AEO 2013
Agriculture	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	6	6	AEO 2013
Agriculture	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	8	16	EIA 2011/Developed from RTF
Agriculture	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$739.48	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.84	32	\$12,376.90	15%	52%	\$0.36	0	0	6th Plan
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	7,229.08	23	\$52,558.55	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$21,415.99	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	Existing	25,529.18	15	\$45,488.58	20%	50%	\$0.17	8	8	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,462.15	23	\$40,237.21	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	Existing	4,501.08	18	\$15,449.81	15%	75%	\$0.10	0	1	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,835.31	18	\$1,638.26	15%	25%	\$0.07	0	0	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	Existing	103,034.45	45	\$199,562.48	15%	25%	\$0.16	10	10	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,956.33	20	\$3,112.66	15%	25%	\$0.07	0	0	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	38,742.45	45	\$27,739.02	45%	50%	\$0.06	2	2	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	Existing	22,437.82	3	\$867.22	0%	5%	\$0.01	1	1	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$506.74	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	Existing	7,753.35	10	\$4,059.38	15%	24%	\$0.05	1	1	6th Plan
Agriculture	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	11,926.74	23	\$45,732.32	2%	at stock turnover	\$0.15	1	1	BEST Simulation
Agriculture	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,153.22	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Heating	Energy Management System	per Facility	New	23,970.22	15	\$37,729.99	20%	50%	\$0.16	2	2	BEST Simulation
Agriculture	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	8,387.95	23	\$30,153.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Agriculture	Heating	Heat Pump - Maintenance	per Facility	New	2,913.29	18	\$11,349.77	15%	75%	\$0.11	0	0	AEG research & analysis
Agriculture	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-38.72	18	\$587.76	15%	25%	\$0.09	0	0	BEST Simulation
Agriculture	Heating	Insulation - Ceiling - R-38	per Facility	New	97,079.56	45	\$159,574.31	15%	25%	\$0.14	3	3	BEST Simulation
Agriculture	Heating	Insulation - Ducting - R-8	per Facility	New	190.36	20	\$1,681.95	15%	25%	\$0.09	0	0	BEST Simulation
Agriculture	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,163.23	45	\$3,305.34	45%	50%	\$0.06	0	0	BEST Simulation
Agriculture	Heating	Strategic Energy Management	per Facility	New	21,077.92	3	\$739.48	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$1,359.40	10%	10%	\$10.00	0	0	BEST Simulation
Agriculture	Heating	Transformer - High Efficiency	per Facility	New	1,947.37	32	\$12,376.90	15%	52%	\$0.36	0	0	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	Existing	674.18	15	\$45,488.58	20%	50%	\$0.17	3	5	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	198	201	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,365.36	5	\$521.00	5%	40%	\$0.03	4	8	Illinois TRM
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,288.65	5	\$694.57	15%	50%	\$0.03	6	12	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,207.18	12	\$4,669.90	3%	25%	\$0.10	14	27	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	722.96	16	\$85.87	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,816.54	10	\$1,024.10	7%	60%	\$0.02	30	53	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$37,322.78	15%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,448.91	8	\$403.57	7%	15%	\$0.03	2	4	CA - DEER
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	277.54	5	\$21.85	10%	25%	\$0.01	0	0	AEG research & analysis
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	101	107	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	21	41	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	2	6	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	Existing	697.71	3	\$867.22	0%	5%	\$0.01	1	1	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.47	10	\$4,059.38	15%	24%	\$0.05	0	0	6th Plan
Agriculture	Interior Lighting	Energy Management System	per Facility	New	631.60	15	\$37,729.99	20%	50%	\$0.16	1	1	BEST Simulation
Agriculture	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	87	97	AEO 2013
Agriculture	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,959.51	5	\$520.39	5%	40%	\$0.04	1	2	Illinois TRM
Agriculture	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,727.53	5	\$693.96	15%	50%	\$0.04	2	2	Illinois TRM
Agriculture	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,934.63	12	\$4,389.83	4%	25%	\$0.09	4	6	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	652.96	16	\$85.57	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,348.94	10	\$1,052.93	22%	60%	\$0.02	5	7	Ameren Missouri TRM
Agriculture	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$37,322.78	18%	30%	\$10.00	0	0	DEER
Agriculture	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,351.09	8	\$392.95	7%	15%	\$0.03	1	1	CA - DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	195.75	5	\$21.54	10%	25%	\$0.01	0	0	AEG research & analysis
Agriculture	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	44	49	AEO 2013
Agriculture	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	9	17	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Agriculture	Interior Lighting	Strategic Energy Management	per Facility	New	629.60	3	\$739.48	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.33	32	\$12,376.90	15%	52%	\$0.36	0	0	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	6,744.13	5	\$151.72	15%	33%	\$0.01	19	19	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	Existing	2,609.99	3	\$3,037.71	5%	39%	\$0.10	14	14	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,267.37	3	\$867.22	0%	5%	\$0.01	2	2	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	783.49	10	\$4,059.38	15%	24%	\$0.05	1	1	6th Plan
Agriculture	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	6,744.13	5	\$151.72	15%	33%	\$0.01	5	5	MI - TRM
Agriculture	Miscellaneous	Commissioning	per Facility	New	2,602.32	3	\$3,037.71	5%	39%	\$0.10	4	4	Energy Management Program Design for PC
Agriculture	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Miscellaneous	Strategic Energy Management	per Facility	New	2,258.36	3	\$739.48	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Miscellaneous	Transformer - High Efficiency	per Facility	New	211.15	32	\$12,376.90	15%	52%	\$0.36	0	0	6th Plan
Agriculture	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	10,539.99	10	\$320.73	15%	75%	\$0.00	50	50	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	11,870.82	15	\$2,067.01	15%	50%	\$0.02	32	34	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessiccant Dryer	per Facility	Existing	2,597.10	15	\$900.60	15%	38%	\$0.04	4	5	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	305.85	5	\$55.23	15%	50%	\$0.04	1	1	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	5,034.56	20	\$3,870.04	15%	50%	\$0.07	13	15	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,632.95	15	\$907.58	15%	38%	\$0.04	4	5	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	5,560.16	10	\$2,014.22	15%	50%	\$0.05	15	16	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$2,275.78	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	Existing	4,485.86	15	\$2,134.38	8%	38%	\$0.05	10	11	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,503.30	3	\$227.58	8%	38%	\$0.03	6	6	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	7,073.78	15	\$3,414.88	8%	38%	\$0.05	16	18	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$606.87	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	33,785.59	10	\$4,398.02	8%	38%	\$0.02	80	81	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	Existing	11,376.06	15	\$1,282.63	8%	38%	\$0.01	27	27	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	Existing	5,765.04	3	\$364.73	8%	38%	\$0.02	13	14	Scaled from Optimization
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	17,203.98	10	\$3,283.80	8%	38%	\$0.03	39	41	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	731.91	8	\$1,141.53	10%	50%	\$0.25	11	12	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	519.30	8	\$404.79	5%	25%	\$0.13	4	4	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	Existing	42,159.97	10	\$954.31	15%	35%	\$0.00	67	67	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,215.09	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$8.50	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	13,237.20	17	\$1,029.56	5%	6%	\$0.01	5	5	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,039.67	10	\$483.68	15%	36%	\$0.03	16	17	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	Existing	13,011.32	17	\$2,472.41	25%	44%	\$0.02	96	98	RSMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,968.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,434.95	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	5,906.11	10	\$1,185.83	8%	38%	\$0.03	13	14	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	Existing	5,964.95	15	\$1,445.58	8%	38%	\$0.03	13	14	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	Existing	3,110.45	3	\$411.16	8%	38%	\$0.05	7	7	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	9,663.46	12	\$4,015.69	8%	38%	\$0.05	21	23	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	Existing	5,011.15	3	\$3,037.71	5%	39%	\$0.10	65	68	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	Existing	4,596.93	3	\$867.22	0%	5%	\$0.01	9	9	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$832.63	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	Existing	1,518.10	10	\$4,059.38	15%	24%	\$0.05	5	6	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$752.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Commissioning	per Facility	New	4,941.15	3	\$3,037.71	5%	39%	\$0.10	20	20	Energy Management Program Design for PC
Agriculture	Motors	Compressed Air - Air Usage Reduction	per Facility	New	10,539.99	10	\$320.73	15%	75%	\$0.00	15	15	MI - TRM
Agriculture	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	11,745.70	15	\$2,067.01	15%	50%	\$0.02	10	10	OH - TRM
Agriculture	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,605.22	15	\$900.60	15%	38%	\$0.04	1	1	MI - TRM
Agriculture	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	306.90	5	\$55.23	15%	50%	\$0.04	0	0	MI - TRM
Agriculture	Motors	Compressed Air - Outside Air Intake	per Facility	New	5,068.92	20	\$3,870.04	15%	50%	\$0.07	4	4	MI - TRM
Agriculture	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,640.37	15	\$907.58	15%	38%	\$0.04	1	1	MI - TRM
Agriculture	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	5,579.53	10	\$2,014.22	15%	50%	\$0.05	5	5	VT - TRM
Agriculture	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$2,275.78	15%	30%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Compressed Air - System Controls	per Facility	New	4,409.39	15	\$2,134.38	8%	38%	\$0.05	3	3	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Maintenance	per Facility	New	2,509.02	3	\$227.58	8%	38%	\$0.03	2	2	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	7,214.00	15	\$3,414.88	8%	38%	\$0.05	5	5	AEG study for State of New Mexico
Agriculture	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$606.87	15%	50%	\$10.00	0	0	VT - TRM
Agriculture	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	33,167.48	10	\$4,398.02	8%	38%	\$0.02	24	24	6th Plan
Agriculture	Motors	Fan System - Controls	per Facility	New	11,211.46	15	\$1,282.63	8%	38%	\$0.01	8	8	Scaled from Optimization
Agriculture	Motors	Fan System - Maintenance	per Facility	New	5,651.07	3	\$364.73	8%	38%	\$0.02	4	4	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Motors	Fan System - Optimization - Optimized System	per Facility	New	16,828.07	10	\$3,283.80	8%	38%	\$0.03	12	12	6th Plan
Agriculture	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	719.48	8	\$1,141.53	10%	50%	\$0.25	3	3	Developed from RTF
Agriculture	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	510.50	8	\$404.79	5%	25%	\$0.13	1	1	Developed from RTF
Agriculture	Motors	High-efficiency Livestock Waterers	per Facility	New	42,159.97	10	\$954.31	15%	35%	\$0.00	20	20	OPA - TRM
Agriculture	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,215.09	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$8.50	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	13,213.12	17	\$1,029.56	5%	6%	\$0.01	2	2	E3T Website
Agriculture	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,011.59	10	\$483.68	15%	36%	\$0.03	5	5	6th Plan
Agriculture	Motors	Motors - Variable Frequency Drive	per Facility	New	13,202.93	17	\$1,483.50	25%	44%	\$0.01	30	30	RSMeans 2013
Agriculture	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,968.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,434.95	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	5,753.78	10	\$1,185.83	8%	38%	\$0.03	4	4	6th Plan
Agriculture	Motors	Pumping System - Controls	per Facility	New	5,834.49	15	\$1,445.58	8%	38%	\$0.03	4	4	Scaled from Optimization
Agriculture	Motors	Pumping System - Maintenance	per Facility	New	3,018.46	3	\$411.16	8%	38%	\$0.05	2	2	Scaled from Optimization
Agriculture	Motors	Pumping System - Optimization - Optimized System	per Facility	New	9,363.21	12	\$4,015.69	8%	38%	\$0.05	7	7	6th Plan
Agriculture	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Motors	Strategic Energy Management	per Facility	New	4,586.68	3	\$739.48	0%	5%	\$0.01	3	3	BEST Simulation
Agriculture	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$832.63	15%	25%	\$10.00	0	0	MT - IRP 2013
Agriculture	Motors	Transformer - High Efficiency	per Facility	New	399.96	32	\$12,376.90	15%	52%	\$0.36	2	2	6th Plan
Agriculture	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$752.22	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$368.37	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$6.68	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$31.56	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$37.63	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	2,878.25	10	\$13,942.94	15%	15%	\$0.65	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$23.97	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,159.74	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$128.66	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,178.85	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	358.67	15	\$61.29	15%	16%	\$0.02	0	0	MT - IRP 2013
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	6,389.18	15	\$53.10	15%	16%	\$0.00	1	1	OPA - TRM
Agriculture	Process	Heat Lamps	per Facility	Existing	11,859.69	10	\$311.93	15%	16%	\$0.00	1	1	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	Existing	10,828.26	10	\$10,690.09	15%	16%	\$0.15	1	1	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$4,024.18	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$68.88	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,322.03	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$30,232.06	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	Existing	99.79	5	\$27.01	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	995.19	10	\$540.12	15%	75%	\$0.08	5	5	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	Existing	2,073.11	5	\$2,929.08	15%	75%	\$0.33	48	49	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	7,979.35	15	\$3,814.51	15%	50%	\$0.06	22	22	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	Existing	15,304.49	18	\$9,154.40	15%	50%	\$0.06	42	43	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	Existing	5,372.44	3	\$508.56	15%	50%	\$0.04	15	15	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	15,738.28	15	\$7,628.72	15%	50%	\$0.06	43	44	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	Existing	1,216.87	3	\$3,037.71	5%	39%	\$0.10	81	16	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	Existing	3,133.12	3	\$867.22	0%	5%	\$0.01	6	6	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	Existing	1,078.92	10	\$4,059.38	15%	24%	\$0.05	4	4	6th Plan
Agriculture	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$368.37	15%	15%	\$10.00	0	0	PA - TRM
Agriculture	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$6.68	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$31.56	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$37.63	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Commissioning	per Facility	New	1,220.20	3	\$3,037.71	5%	39%	\$0.10	25	11	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	2,865.53	10	\$13,942.94	15%	15%	\$0.65	0	0	VT - TRM
Agriculture	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$23.97	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,159.74	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$128.66	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,178.85	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Heat Lamp Setback (Microzone)	per Facility	New	358.62	15	\$61.29	15%	16%	\$0.02	0	0	MT - IRP 2013
Agriculture	Process	Heat Lamp/Heating Pad Controller	per Facility	New	6,389.18	15	\$53.10	15%	16%	\$0.00	0	0	OPA - TRM
Agriculture	Process	Heat Lamps	per Facility	New	11,857.42	10	\$311.93	15%	16%	\$0.00	0	0	OPA - TRM
Agriculture	Process	Heat Reclaimers	per Facility	New	10,801.65	10	\$10,690.09	15%	16%	\$0.15	0	0	VT - TRM
Agriculture	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$4,024.18	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$68.88	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,322.03	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$30,232.06	0%	0%	\$10.00	0	0	6th Plan
Agriculture	Process	Process - Conductivity Controls	per Facility	New	99.89	5	\$27.01	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Agriculture	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	995.20	10	\$540.12	15%	75%	\$0.08	1	1	AEG study for State of New Mexico
Agriculture	Process	Process - Timers and Controls	per Facility	New	2,066.91	5	\$2,929.08	15%	75%	\$0.33	15	15	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	7,992.30	15	\$3,814.51	15%	50%	\$0.06	7	7	Developed from RTF
Agriculture	Process	Refrigeration - System Controls	per Facility	New	15,368.72	18	\$9,154.40	15%	50%	\$0.06	13	13	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Maintenance	per Facility	New	5,374.66	3	\$508.56	15%	50%	\$0.04	5	5	AEG study for State of New Mexico
Agriculture	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	15,777.42	15	\$7,628.72	15%	50%	\$0.06	13	13	AEG study for State of New Mexico
Agriculture	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Agriculture	Process	Strategic Energy Management	per Facility	New	3,132.74	3	\$739.48	0%	5%	\$0.01	2	2	BEST Simulation
Agriculture	Process	Transformer - High Efficiency	per Facility	New	279.35	32	\$12,376.90	15%	52%	\$0.36	1	1	6th Plan
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$21,415.99	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	Existing	453.52	3	\$867.22	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	Existing	156.51	10	\$4,059.38	15%	24%	\$0.05	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	166.12	15	\$35.50	15%	35%	\$0.02	0	0	6th Plan
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,164.65	20	\$5,597.25	100%	at stock turnover	\$0.11	5	5	BEST Simulation
Agriculture	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,153.22	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Agriculture	Ventilation	Strategic Energy Management	per Facility	New	162.91	3	\$739.48	0%	5%	\$0.01	0	0	BEST Simulation
Agriculture	Ventilation	Transformer - High Efficiency	per Facility	New	15.36	32	\$12,376.90	15%	52%	\$0.36	0	0	6th Plan
Agriculture	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	59.70	15	\$16.69	15%	35%	\$0.03	0	0	6th Plan
Agriculture	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,883.63	20	\$3,483.14	100%	at stock turnover	\$0.13	1	1	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	35,953.26	23	\$92,412.10	2%	at stock turnover	\$0.17	92	89	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	20,587.18	23	\$11,393.41	6%	at stock turnover	\$0.06	117	117	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,933.09	10	\$3,317.21	15%	45%	\$0.04	32	36	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,699.67	15	\$1,786.55	15%	60%	\$0.07	11	13	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	502.44	15	\$447.73	15%	75%	\$0.09	3	3	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	19,197.06	15	\$10,305.04	15%	50%	\$0.06	158	175	BEST Simulation
Chemical Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	15,186.77	12	\$28,760.55	15%	50%	\$0.22	118	150	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	Existing	4,495.22	15	\$60,548.81	20%	50%	\$0.18	30	35	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	34,699.65	23	\$83,240.81	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	14,005.32	18	\$20,748.12	15%	75%	\$0.10	29	36	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,000.05	18	\$2,199.91	15%	25%	\$0.07	2	3	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	Existing	6,106.26	10	\$13,739.98	18%	30%	\$0.10	25	10	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	9,186.33	45	\$268,000.30	15%	25%	\$0.16	21	24	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,868.03	20	\$4,180.21	15%	25%	\$0.07	7	7	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-186.82	45	\$37,251.93	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	28,162.97	23	\$94,816.88	4%	at stock turnover	\$0.35	27	27	BEST Simulation
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	Existing	4,246.97	3	\$1,315.28	0%	5%	\$0.01	5	6	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$4.37	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,440.65	10	\$6,177.69	15%	24%	\$0.05	3	4	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	32,863.39	23	\$17,238.72	3%	at stock turnover	\$0.05	96	95	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,251.48	10	\$2,673.67	15%	45%	\$0.04	12	15	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,823.79	4	\$1,803.66	15%	50%	\$0.03	21	25	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,693.82	15	\$2,526.96	15%	60%	\$0.07	7	9	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	480.76	15	\$444.42	15%	75%	\$0.09	1	2	BEST Simulation
Chemical Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	27,221.69	23	\$69,252.28	2%	at stock turnover	\$0.15	40	38	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	12,564.72	23	\$3,015.84	6%	at stock turnover	\$0.02	44	44	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,401.74	10	\$2,590.30	15%	45%	\$0.04	7	7	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,748.15	15	\$1,248.89	15%	60%	\$0.07	2	2	BEST Simulation
Chemical Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$67.06	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	10,266.40	15	\$10,305.04	15%	50%	\$0.10	27	28	BEST Simulation
Chemical Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	8,087.99	12	\$19,006.86	15%	50%	\$0.25	21	22	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Cooling	Energy Management System	per Facility	New	2,400.81	15	\$50,131.63	20%	50%	\$0.16	5	6	BEST Simulation
Chemical Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	26,381.08	23	\$62,379.45	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	9,036.90	18	\$15,241.98	15%	75%	\$0.11	6	7	AEG research & analysis
Chemical Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	877.66	18	\$789.26	15%	25%	\$0.09	1	1	BEST Simulation
Chemical Mfg	Cooling	HVAC - Economizer	per Facility	New	3,117.80	10	\$8,111.57	18%	30%	\$0.11	6	3	DEER
Chemical Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	571.49	45	\$214,298.55	15%	25%	\$0.14	0	0	BEST Simulation
Chemical Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	2,039.68	20	\$2,258.71	15%	25%	\$0.09	2	2	BEST Simulation
Chemical Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-74.67	45	\$4,438.97	45%	50%	\$0.06	0	0	BEST Simulation
Chemical Mfg	Cooling	RTU - EER 12.0	per Facility	New	16,649.44	23	\$55,381.28	4%	at stock turnover	\$0.35	10	10	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Cooling	Strategic Energy Management	per Facility	New	2,292.06	3	\$1,143.39	0%	5%	\$0.01	1	1	BEST Simulation
Chemical Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$11.74	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Cooling	Transformer - High Efficiency	per Facility	New	187.98	32	\$19,139.68	15%	52%	\$0.38	1	1	6th Plan
Chemical Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	20,130.49	23	\$12,879.18	3%	at stock turnover	\$0.07	36	36	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,718.92	10	\$1,635.22	15%	45%	\$0.04	2	2	DEER
Chemical Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,109.78	4	\$1,113.78	15%	50%	\$0.04	3	4	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,018.04	15	\$1,602.74	15%	60%	\$0.07	1	1	BEST Simulation
Chemical Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$103.80	15%	75%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	124.58	15	\$60,548.81	20%	50%	\$0.18	12	19	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	410.59	5	\$76.79	15%	25%	\$0.03	13	26	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.21	10	\$179.91	33%	60%	\$0.11	14	29	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,169.05	10	\$1,228.73	15%	30%	\$0.06	106	210	AEG research & analysis
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	561	569	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	283	287	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	397	792	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	44	124	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$1,315.28	0%	5%	\$0.01	2	4	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.69	10	\$6,177.69	15%	24%	\$0.05	1	2	6th Plan
Chemical Mfg	Exterior Lighting	Energy Management System	per Facility	New	108.74	15	\$50,131.63	20%	50%	\$0.16	3	5	BEST Simulation
Chemical Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.08	5	\$76.44	15%	25%	\$0.03	4	6	Illinois TRM
Chemical Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.32	10	\$110.23	44%	60%	\$0.06	2	4	AEG research & analysis
Chemical Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,887.22	10	\$1,222.92	15%	30%	\$0.06	30	45	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	246	274	AEO 2013
Chemical Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	124	137	AEO 2013
Chemical Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	176	338	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	8	22	EIA 2011/Developed from RTF
Chemical Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$1,143.39	0%	5%	\$0.01	1	1	BEST Simulation
Chemical Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.84	32	\$19,139.68	15%	52%	\$0.38	0	1	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	9,708.22	23	\$70,582.96	2%	at stock turnover	\$0.17	24	24	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$28,760.55	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Heating	Energy Management System	per Facility	Existing	34,284.15	15	\$60,548.81	20%	50%	\$0.18	223	226	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,306.52	23	\$54,036.14	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	6,044.67	18	\$20,748.12	15%	75%	\$0.10	14	15	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,464.71	18	\$2,199.91	15%	25%	\$0.07	5	5	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	138,369.05	45	\$268,000.30	15%	25%	\$0.16	303	305	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,627.23	20	\$4,180.21	15%	25%	\$0.07	6	6	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	52,028.77	45	\$37,251.93	45%	50%	\$0.06	57	57	BEST Simulation
Chemical Mfg	Heating	Strategic Energy Management	per Facility	Existing	30,132.63	3	\$1,315.28	0%	5%	\$0.01	33	33	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$4.37	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	10,412.28	10	\$6,177.69	15%	24%	\$0.05	21	21	6th Plan
Chemical Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	16,016.89	23	\$61,415.75	2%	at stock turnover	\$0.15	23	22	BEST Simulation
Chemical Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$19,006.86	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Heating	Energy Management System	per Facility	New	32,190.55	15	\$50,131.63	20%	50%	\$0.16	65	65	BEST Simulation
Chemical Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	11,264.52	23	\$40,493.90	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Chemical Mfg	Heating	Heat Pump - Maintenance	per Facility	New	3,912.37	18	\$15,241.98	15%	75%	\$0.11	3	3	AEG research & analysis
Chemical Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-52.00	18	\$789.26	15%	25%	\$0.09	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	130,371.98	45	\$214,298.55	15%	25%	\$0.14	88	88	BEST Simulation
Chemical Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	255.64	20	\$2,258.71	15%	25%	\$0.09	0	0	BEST Simulation
Chemical Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	6,933.91	45	\$4,438.97	45%	50%	\$0.06	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Heating	Strategic Energy Management	per Facility	New	28,306.38	3	\$1,143.39	0%	5%	\$0.01	10	10	BEST Simulation
Chemical Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$11.74	10%	10%	\$10.00	0	0	BEST Simulation
Chemical Mfg	Heating	Transformer - High Efficiency	per Facility	New	2,615.20	32	\$19,139.68	15%	52%	\$0.38	7	7	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	Existing	674.18	15	\$60,548.81	20%	50%	\$0.18	65	105	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	4,306	4,367	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,466.49	5	\$520.90	5%	40%	\$0.03	91	189	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,187.52	5	\$694.53	15%	50%	\$0.03	116	247	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,207.18	12	\$4,669.80	3%	25%	\$0.10	301	593	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	722.96	16	\$85.98	1%	3%	\$0.01	5	10	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,816.54	10	\$1,024.18	7%	60%	\$0.02	645	1,159	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$1,610.98	15%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timelocks and Timers	per Facility	Existing	1,448.91	8	\$403.58	7%	15%	\$0.03	41	79	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	278.00	5	\$21.78	10%	25%	\$0.01	3	10	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	2,189	2,330	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	447	891	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	49	139	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	697.39	3	\$1,315.28	0%	5%	\$0.01	12	24	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.47	10	\$6,177.69	15%	24%	\$0.05	6	10	6th Plan
Chemical Mfg	Interior Lighting	Energy Management System	per Facility	New	631.60	15	\$50,131.63	20%	50%	\$0.16	20	30	BEST Simulation
Chemical Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	1,886	2,100	AEO 2013
Chemical Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,045.65	5	\$520.39	5%	40%	\$0.04	26	37	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,641.39	5	\$693.85	15%	50%	\$0.04	34	48	Illinois TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,934.63	12	\$4,389.87	4%	25%	\$0.09	87	126	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	652.96	16	\$85.63	1%	3%	\$0.01	1	2	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,348.94	10	\$1,052.84	22%	60%	\$0.02	106	155	Ameren Missouri TRM
Chemical Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$1,610.98	18%	30%	\$10.00	0	0	DEER
Chemical Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,351.09	8	\$392.88	7%	15%	\$0.03	12	17	CA - DEER
Chemical Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	195.75	5	\$21.64	10%	25%	\$0.01	1	2	AEG research & analysis
Chemical Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	964	1,059	AEO 2013
Chemical Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	198	380	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	9	25	EIA 2011/Developed from RTF
Chemical Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	629.60	3	\$1,143.39	0%	5%	\$0.01	3	5	BEST Simulation
Chemical Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.33	32	\$19,139.68	15%	52%	\$0.38	2	3	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$1.31	0%	0%	\$10.00	0	0	MI - TRM
Chemical Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,923.18	3	\$5,043.59	5%	39%	\$0.09	334	334	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,539.45	3	\$1,315.28	0%	5%	\$0.01	43	43	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	877.50	10	\$6,177.69	15%	24%	\$0.05	28	28	6th Plan
Chemical Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$1.31	0%	0%	\$10.00	0	0	MI - TRM
Chemical Mfg	Miscellaneous	Commissioning	per Facility	New	2,926.22	3	\$5,043.59	5%	39%	\$0.09	95	95	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,539.45	3	\$1,143.39	0%	5%	\$0.01	12	12	BEST Simulation
Chemical Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	237.43	32	\$19,139.68	15%	52%	\$0.38	8	8	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	42,038.47	10	\$1,279.71	15%	75%	\$0.00	4,359	4,359	MI - TRM
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	47,346.43	15	\$8,243.97	15%	50%	\$0.02	2,810	2,917	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	10,358.45	15	\$3,592.17	15%	38%	\$0.04	384	420	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,219.87	5	\$220.70	15%	50%	\$0.04	70	77	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	20,080.21	20	\$15,435.07	15%	50%	\$0.07	1,133	1,290	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	10,501.45	15	\$3,619.29	15%	38%	\$0.04	390	425	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	22,176.56	10	\$8,033.55	15%	50%	\$0.05	1,276	1,400	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$19.65	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	17,902.58	15	\$8,512.79	8%	38%	\$0.05	877	975	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	9,984.33	3	\$908.03	8%	38%	\$0.03	496	537	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	28,230.65	15	\$13,620.47	8%	38%	\$0.05	1,377	1,544	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$5.24	15%	50%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	15,570.19	10	\$2,026.85	8%	38%	\$0.02	799	807	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	Existing	5,242.69	15	\$591.16	8%	38%	\$0.01	272	272	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	Existing	2,656.84	3	\$168.16	8%	38%	\$0.02	131	138	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	7,928.50	10	\$1,513.38	8%	38%	\$0.03	390	411	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,536.21	8	\$2,406.62	10%	50%	\$0.25	508	541	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,089.96	8	\$853.23	5%	25%	\$0.13	180	192	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$8.24	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,761.39	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$6.72	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	27,960.57	17	\$2,170.76	5%	6%	\$0.01	241	242	E3T Website
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	4,329.45	10	\$1,019.84	15%	36%	\$0.03	766	799	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	27,556.45	17	\$5,212.90	25%	44%	\$0.02	4,479	4,524	RSMeans 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,360.39	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,141.05	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	18,486.86	10	\$3,547.00	8%	38%	\$0.03	940	958	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	Existing	18,673.70	15	\$4,324.50	8%	38%	\$0.03	958	968	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	9,734.46	3	\$1,230.08	8%	38%	\$0.05	490	505	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	30,240.18	12	\$12,012.49	8%	38%	\$0.05	1,513	1,568	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	Existing	10,518.02	3	\$5,043.59	5%	39%	\$0.09	2,976	3,090	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	Existing	9,687.61	3	\$1,315.28	0%	5%	\$0.01	417	423	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$662.10	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	3,182.81	10	\$6,177.69	15%	24%	\$0.05	250	258	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,062.33	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Commissioning	per Facility	New	10,454.50	3	\$5,043.59	5%	39%	\$0.09	935	935	Energy Management Program Design for PC
Chemical Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	42,038.47	10	\$1,279.71	15%	75%	\$0.00	1,333	1,333	MI - TRM
Chemical Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	46,847.41	15	\$8,243.97	15%	50%	\$0.02	863	863	OH - TRM
Chemical Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	10,452.16	15	\$3,592.17	15%	38%	\$0.04	123	123	MI - TRM
Chemical Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,224.05	5	\$220.70	15%	50%	\$0.04	22	22	MI - TRM
Chemical Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	20,217.25	20	\$15,435.07	15%	50%	\$0.07	370	370	MI - TRM
Chemical Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	10,469.72	15	\$3,619.29	15%	38%	\$0.04	124	124	MI - TRM
Chemical Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	22,253.80	10	\$8,033.55	15%	50%	\$0.05	408	408	VT - TRM
Chemical Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$19.65	15%	30%	\$10.00	0	0	VT - TRM
Chemical Mfg	Motors	Compressed Air - System Controls	per Facility	New	17,983.03	15	\$8,512.79	8%	38%	\$0.05	282	282	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	10,007.14	3	\$908.03	8%	38%	\$0.03	158	158	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	28,376.57	15	\$13,620.47	8%	38%	\$0.05	445	445	AEG study for State of New Mexico
Chemical Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$5.24	15%	50%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	15,285.33	10	\$2,026.85	8%	38%	\$0.02	242	242	6th Plan
Chemical Mfg	Motors	Fan System - Controls	per Facility	New	5,166.83	15	\$591.16	8%	38%	\$0.01	82	82	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Maintenance	per Facility	New	2,604.31	3	\$168.16	8%	38%	\$0.02	41	41	Scaled from Optimization
Chemical Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	7,755.26	10	\$1,513.38	8%	38%	\$0.03	122	122	6th Plan
Chemical Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,522.29	8	\$2,406.62	10%	50%	\$0.25	160	160	Developed from RTF
Chemical Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,080.11	8	\$853.23	5%	25%	\$0.13	57	57	Developed from RTF
Chemical Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$8.24	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,761.39	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$6.72	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	27,949.17	17	\$2,170.76	5%	6%	\$0.01	74	74	E3T Website
Chemical Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	4,305.11	10	\$1,019.84	15%	36%	\$0.03	238	238	6th Plan
Chemical Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	27,927.61	17	\$3,127.74	25%	44%	\$0.01	1,401	1,401	RSMeans 2013
Chemical Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,360.39	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,141.05	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	18,342.39	10	\$3,547.00	8%	38%	\$0.03	290	290	6th Plan
Chemical Mfg	Motors	Pumping System - Controls	per Facility	New	18,600.60	15	\$4,324.50	8%	38%	\$0.03	295	295	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Maintenance	per Facility	New	9,621.95	3	\$1,230.08	8%	38%	\$0.05	152	152	Scaled from Optimization
Chemical Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	29,846.35	12	\$12,012.49	8%	38%	\$0.05	472	472	6th Plan
Chemical Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Motors	Strategic Energy Management	per Facility	New	9,702.02	3	\$1,143.39	0%	5%	\$0.01	128	128	BEST Simulation
Chemical Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$662.10	15%	25%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Motors	Transformer - High Efficiency	per Facility	New	846.23	32	\$19,139.68	15%	52%	\$0.38	83	83	6th Plan
Chemical Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,062.33	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,102.25	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$988.63	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$4,654.03	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$5,551.60	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$120.37	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$3,556.86	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$171,574.07	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$19,050.31	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$174,375.77	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$101.49	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$0.46	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$2.70	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$92.28	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$7,637.01	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$130.66	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$5,512.25	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$57,374.16	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	Existing	236.52	5	\$64.01	15%	75%	\$0.07	25	25	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,358.89	10	\$1,280.26	15%	75%	\$0.08	244	245	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	Existing	4,032.72	5	\$5,558.97	15%	75%	\$0.33	2,065	2,091	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	4,415.44	15	\$2,110.73	15%	50%	\$0.06	266	268	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	Existing	8,468.87	18	\$5,065.74	15%	50%	\$0.06	504	520	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	2,972.89	3	\$281.42	15%	50%	\$0.04	180	180	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	8,708.91	15	\$4,221.45	15%	50%	\$0.06	523	531	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	Existing	1,642.49	3	\$5,043.59	5%	39%	\$0.09	2,400	483	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	Existing	5,947.88	3	\$1,315.28	0%	5%	\$0.01	257	257	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	Existing	2,053.22	10	\$6,177.69	15%	24%	\$0.05	166	166	6th Plan
Chemical Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,102.25	0%	0%	\$10.00	0	0	PA - TRM
Chemical Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$988.63	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$4,654.03	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$5,551.60	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Commissioning	per Facility	New	1,644.98	3	\$5,043.59	5%	39%	\$0.09	738	329	Energy Management Program Design for PC
Chemical Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$120.37	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$3,556.86	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$171,574.07	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$19,050.31	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$174,375.77	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$101.49	0%	0%	\$10.00	0	0	MT - IRP 2013
Chemical Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$0.46	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$2.70	0%	0%	\$10.00	0	0	OPA - TRM
Chemical Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$92.28	0%	0%	\$10.00	0	0	VT - TRM
Chemical Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$7,637.01	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$130.66	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$5,512.25	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$57,374.16	0%	0%	\$10.00	0	0	6th Plan
Chemical Mfg	Process	Process - Conductivity Controls	per Facility	New	236.77	5	\$64.01	15%	75%	\$0.07	8	8	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,358.91	10	\$1,280.26	15%	75%	\$0.08	75	75	AEG study for State of New Mexico
Chemical Mfg	Process	Process - Timers and Controls	per Facility	New	4,022.83	5	\$5,558.97	15%	75%	\$0.33	637	637	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	4,422.60	15	\$2,110.73	15%	50%	\$0.06	82	82	Developed from RTF
Chemical Mfg	Process	Refrigeration - System Controls	per Facility	New	8,504.41	18	\$5,065.74	15%	50%	\$0.06	157	157	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Maintenance	per Facility	New	2,974.11	3	\$281.42	15%	50%	\$0.04	55	55	AEG study for State of New Mexico
Chemical Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	8,730.57	15	\$4,221.45	15%	50%	\$0.06	161	161	AEG study for State of New Mexico
Chemical Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Chemical Mfg	Process	Strategic Energy Management	per Facility	New	5,947.88	3	\$1,143.39	0%	5%	\$0.01	79	79	BEST Simulation
Chemical Mfg	Process	Transformer - High Efficiency	per Facility	New	543.68	32	\$19,139.68	15%	52%	\$0.38	53	53	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$28,760.55	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	609.05	3	\$1,315.28	0%	5%	\$0.01	4	6	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	210.18	10	\$6,177.69	15%	24%	\$0.05	3	3	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	223.09	15	\$47.84	15%	35%	\$0.02	6	8	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,935.81	20	\$7,516.77	100%	at stock turnover	\$0.11	138	138	BEST Simulation
Chemical Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$19,006.86	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Chemical Mfg	Ventilation	Strategic Energy Management	per Facility	New	218.78	3	\$1,143.39	0%	5%	\$0.01	1	1	BEST Simulation
Chemical Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	20.63	32	\$19,139.68	15%	52%	\$0.38	0	0	6th Plan
Chemical Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	80.17	15	\$22.21	15%	35%	\$0.03	1	1	6th Plan
Chemical Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,872.54	20	\$4,677.65	100%	at stock turnover	\$0.13	21	21	BEST Simulation
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	55,496.27	23	\$142,644.26	2%	at stock turnover	\$0.17	14	13	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	31,777.68	23	\$17,586.48	6%	at stock turnover	\$0.06	17	17	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	18,419.52	10	\$5,120.34	15%	45%	\$0.04	5	5	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	4,297.68	15	\$2,757.65	15%	60%	\$0.07	2	2	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	799.79	15	\$691.11	15%	75%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	28,735.63	15	\$30,091.99	15%	50%	\$0.11	23	25	BEST Simulation
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	23,441.79	12	\$44,393.83	15%	50%	\$0.22	18	22	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	6,938.67	15	\$92,605.65	20%	50%	\$0.18	5	5	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	53,561.22	23	\$128,487.76	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	22,285.22	18	\$32,026.09	15%	75%	\$0.10	5	6	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,591.64	18	\$3,395.71	15%	25%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	9,718.19	10	\$21,208.58	18%	30%	\$0.10	4	2	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	14,179.72	45	\$413,676.39	15%	25%	\$0.16	3	4	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	4,564.46	20	\$6,452.45	15%	25%	\$0.07	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-297.33	45	\$57,500.83	45%	50%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	43,471.43	23	\$146,356.19	4%	at stock turnover	\$0.35	4	4	BEST Simulation
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	6,555.48	3	\$1,380.61	0%	5%	\$0.01	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$63.87	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	2,223.74	10	\$6,399.14	15%	24%	\$0.04	0	1	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	50,726.84	23	\$26,609.12	3%	at stock turnover	\$0.05	14	14	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	14,280.28	10	\$4,126.98	15%	45%	\$0.04	2	2	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	21,337.94	4	\$2,784.08	15%	50%	\$0.03	3	4	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	5,876.12	15	\$3,900.56	15%	60%	\$0.07	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	764.73	15	\$685.98	15%	75%	\$0.09	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	42,018.50	23	\$106,895.53	2%	at stock turnover	\$0.15	6	6	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	19,394.48	23	\$111,006.67	6%	at stock turnover	\$0.60	7	7	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	12,968.64	10	\$3,998.28	15%	45%	\$0.04	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,698.39	15	\$1,927.75	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$979.02	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	15,344.85	15	\$30,091.99	15%	50%	\$0.19	4	4	BEST Simulation
Electronic Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	12,484.35	12	\$29,338.35	15%	50%	\$0.25	3	3	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Cooling	Energy Management System	per Facility	New	3,871.78	15	\$76,529.57	20%	50%	\$0.16	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	40,720.97	23	\$96,286.85	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	14,573.41	18	\$23,527.02	15%	75%	\$0.11	1	1	AEG research & analysis
Electronic Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	1,354.73	18	\$1,218.25	15%	25%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	5,028.46	10	\$12,520.72	18%	30%	\$0.11	1	1	DEER
Electronic Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	921.65	45	\$330,784.16	15%	25%	\$0.14	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	3,148.38	20	\$3,486.47	15%	25%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-115.25	45	\$6,851.86	45%	50%	\$0.06	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	25,699.53	23	\$85,484.72	4%	at stock turnover	\$0.35	2	2	BEST Simulation
Electronic Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	3,537.95	3	\$1,115.14	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$171.34	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	290.16	32	\$18,666.86	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	31,072.76	23	\$19,879.88	3%	at stock turnover	\$0.07	5	5	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,283.96	10	\$2,524.09	15%	45%	\$0.04	0	0	DEER
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	10,974.41	4	\$1,719.20	15%	50%	\$0.04	1	1	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	3,114.98	15	\$2,473.95	15%	60%	\$0.07	0	0	BEST Simulation
Electronic Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$1,515.54	15%	75%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	124.58	15	\$92,605.65	20%	50%	\$0.18	1	2	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	410.59	5	\$76.80	15%	25%	\$0.03	1	3	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.21	10	\$179.91	33%	60%	\$0.11	1	3	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,169.05	10	\$1,228.73	15%	30%	\$0.06	10	20	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	54	55	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	27	28	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	38	76	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	4	12	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$1,380.61	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.69	10	\$6,399.14	15%	24%	\$0.04	0	0	6th Plan
Electronic Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	108.74	15	\$76,529.57	20%	50%	\$0.16	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.08	5	\$76.42	15%	25%	\$0.03	0	1	Illinois TRM
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.32	10	\$110.23	44%	60%	\$0.06	0	0	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,887.22	10	\$1,222.92	15%	30%	\$0.06	3	4	AEG research & analysis
Electronic Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	24	26	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	12	13	AEO 2013
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	17	33	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	1	2	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$1,115.14	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.84	32	\$18,666.86	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	14,985.28	23	\$108,949.52	2%	at stock turnover	\$0.17	4	3	BEST Simulation
Electronic Equipment Mfg	Heating	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$44,393.83	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	Existing	52,919.88	15	\$92,605.65	20%	50%	\$0.18	33	34	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	5,103.84	23	\$83,408.39	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	9,330.36	18	\$32,026.09	15%	75%	\$0.10	2	2	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	3,804.44	18	\$3,395.71	15%	25%	\$0.07	1	1	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	213,581.88	45	\$413,676.39	15%	25%	\$0.16	45	45	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	4,055.31	20	\$6,452.45	15%	25%	\$0.07	1	1	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	80,309.89	45	\$57,500.83	45%	50%	\$0.06	8	9	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	46,511.73	3	\$1,380.61	0%	5%	\$0.01	5	5	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$63.87	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	16,072.05	10	\$6,399.14	15%	24%	\$0.04	3	3	6th Plan
Electronic Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	24,723.15	23	\$94,799.31	2%	at stock turnover	\$0.15	3	3	BEST Simulation
Electronic Equipment Mfg	Heating	De-stratification Fans (HVLS)	per Facility	New	0.00	12	\$29,338.35	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Heating	Energy Management System	per Facility	New	49,688.27	15	\$76,529.57	20%	50%	\$0.16	10	10	BEST Simulation
Electronic Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	17,387.54	23	\$62,505.05	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	6,039.00	18	\$23,527.02	15%	75%	\$0.11	0	0	AEG research & analysis
Electronic Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-80.27	18	\$1,218.25	15%	25%	\$0.09	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	201,237.87	45	\$330,784.16	15%	25%	\$0.14	13	13	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	394.60	20	\$3,486.47	15%	25%	\$0.09	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	10,702.95	45	\$6,851.86	45%	50%	\$0.06	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	43,692.79	3	\$1,115.14	0%	5%	\$0.01	1	1	BEST Simulation
Electronic Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$171.34	10%	10%	\$10.00	0	0	BEST Simulation
Electronic Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	4,036.73	32	\$18,666.86	15%	52%	\$0.34	1	1	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	674.18	15	\$92,605.65	20%	50%	\$0.18	6	10	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	415	421	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,365.36	5	\$520.91	5%	40%	\$0.03	8	18	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,288.65	5	\$694.55	15%	50%	\$0.03	12	24	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,207.18	12	\$4,669.80	3%	25%	\$0.10	29	57	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	722.96	16	\$85.98	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,816.54	10	\$1,024.19	7%	60%	\$0.02	62	112	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$4,704.26	15%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,448.91	8	\$403.57	7%	15%	\$0.03	4	8	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	277.54	5	\$21.80	10%	25%	\$0.01	0	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	211	225	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	43	86	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	5	13	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	697.71	3	\$1,380.61	0%	5%	\$0.01	1	2	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.47	10	\$6,399.14	15%	24%	\$0.04	1	1	6th Plan
Electronic Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	631.60	15	\$76,529.57	20%	50%	\$0.16	2	3	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	182	203	AEO 2013
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,045.65	5	\$520.38	5%	40%	\$0.04	3	4	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,641.39	5	\$693.86	15%	50%	\$0.04	3	5	Illinois TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,934.63	12	\$4,389.88	4%	25%	\$0.09	8	12	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	652.96	16	\$85.63	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,348.94	10	\$1,052.84	22%	60%	\$0.02	10	15	Ameren Missouri TRM
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$4,704.26	18%	30%	\$10.00	0	0	DEER
Electronic Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,351.09	8	\$392.90	7%	15%	\$0.03	1	2	CA - DEER
Electronic Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	195.75	5	\$21.65	10%	25%	\$0.01	0	0	AEG research & analysis
Electronic Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	93	102	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	19	37	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	1	2	EIA 2011/Developed from RTF
Electronic Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	629.60	3	\$1,115.14	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.33	32	\$18,666.86	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$19.12	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,823.03	3	\$1,323.85	5%	39%	\$0.07	31	31	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,452.45	3	\$1,380.61	0%	5%	\$0.01	4	4	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	847.44	10	\$6,399.14	15%	24%	\$0.04	3	3	6th Plan
Electronic Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$19.12	0%	0%	\$10.00	0	0	MI - TRM
Electronic Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	2,825.97	3	\$1,323.85	5%	39%	\$0.07	9	9	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,452.45	3	\$1,115.14	0%	5%	\$0.01	1	1	BEST Simulation
Electronic Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	229.30	32	\$18,666.86	15%	52%	\$0.34	1	1	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	4,131.54	10	\$125.75	15%	75%	\$0.00	41	41	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,653.20	15	\$810.20	15%	50%	\$0.02	27	28	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,027.14	15	\$353.05	15%	38%	\$0.04	4	4	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	119.89	5	\$21.69	15%	50%	\$0.04	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,973.48	20	\$1,516.95	15%	50%	\$0.07	11	12	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,028.54	15	\$355.69	15%	38%	\$0.04	4	4	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	2,178.18	10	\$789.55	15%	50%	\$0.05	12	13	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$286.85	15%	30%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	1,758.40	15	\$836.63	8%	38%	\$0.05	8	9	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	981.26	3	\$89.23	8%	38%	\$0.03	5	5	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,772.83	15	\$1,338.61	8%	38%	\$0.05	13	15	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$76.49	15%	50%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	3,383.28	10	\$440.40	8%	38%	\$0.02	17	17	6th Plan
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	1,139.20	15	\$128.47	8%	38%	\$0.01	6	6	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	583.41	3	\$36.52	8%	38%	\$0.02	3	3	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	1,722.80	10	\$328.84	8%	38%	\$0.03	8	9	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	237.17	8	\$413.44	10%	50%	\$0.28	6	6	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	168.27	8	\$146.60	5%	25%	\$0.14	2	2	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$120.28	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,371.29	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$9.06	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	4,266.38	17	\$372.94	5%	6%	\$0.01	3	3	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	661.91	10	\$175.21	15%	36%	\$0.04	9	9	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	4,209.52	17	\$895.53	25%	44%	\$0.02	53	53	RSMeans 2013
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$3,177.71	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,536.15	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	697.40	10	\$133.82	8%	38%	\$0.03	3	3	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	704.45	15	\$163.16	8%	38%	\$0.03	3	4	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	367.00	3	\$46.39	8%	38%	\$0.05	2	2	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	1,140.79	12	\$453.18	8%	38%	\$0.05	6	6	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	1,623.86	3	\$1,323.85	5%	39%	\$0.07	36	37	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,481.60	3	\$1,380.61	0%	5%	\$0.01	5	5	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$891.36	15%	25%	\$10.00	0	0	MT - IRP 2013

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	494.97	10	\$6,399.14	15%	24%	\$0.04	3	3	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$362.11	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Commissioning	per Facility	New	1,847.55	3	\$1,323.85	5%	39%	\$0.07	16	16	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	4,131.54	10	\$125.75	15%	75%	\$0.00	13	13	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	4,604.16	15	\$810.20	15%	50%	\$0.02	8	8	OH - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,027.24	15	\$353.05	15%	38%	\$0.04	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	120.30	5	\$21.69	15%	50%	\$0.04	0	0	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	1,986.95	20	\$1,516.95	15%	50%	\$0.07	4	4	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,028.96	15	\$355.69	15%	38%	\$0.04	1	1	MI - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	2,187.10	10	\$789.55	15%	50%	\$0.05	4	4	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$286.85	15%	30%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	1,728.42	15	\$836.63	8%	38%	\$0.05	3	3	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	983.50	3	\$89.23	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	2,827.79	15	\$1,338.61	8%	38%	\$0.05	4	4	AEG study for State of New Mexico
Electronic Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$76.49	15%	50%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	3,321.38	10	\$440.40	8%	38%	\$0.02	5	5	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Fan System - Controls	per Facility	New	1,122.71	15	\$128.47	8%	38%	\$0.01	2	2	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	565.90	3	\$36.52	8%	38%	\$0.02	1	1	Scaled from Optimization
Electronic Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	1,685.16	10	\$328.84	8%	38%	\$0.03	3	3	6th Plan
Electronic Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	269.02	8	\$413.44	10%	50%	\$0.25	3	3	Developed from RTF
Electronic Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	190.88	8	\$146.60	5%	25%	\$0.13	1	1	Developed from RTF
Electronic Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$120.28	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,371.29	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$9.06	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,830.04	17	\$372.94	5%	6%	\$0.01	1	1	E3T Website
Electronic Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	750.22	10	\$175.21	15%	36%	\$0.03	4	4	6th Plan
Electronic Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,826.32	17	\$537.32	25%	44%	\$0.01	23	23	RSMeans 2013
Electronic Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$3,177.71	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,536.15	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	691.96	10	\$133.82	8%	38%	\$0.03	1	1	6th Plan
Electronic Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	701.70	15	\$163.16	8%	38%	\$0.03	1	1	Scaled from Optimization
Electronic Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	362.98	3	\$46.39	8%	38%	\$0.05	1	1	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	1,125.93	12	\$453.18	8%	38%	\$0.05	2	2	6th Plan
Electronic Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	1,676.66	3	\$1,115.14	0%	5%	\$0.01	2	2	BEST Simulation
Electronic Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$891.36	15%	25%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	149.55	32	\$18,666.86	15%	52%	\$0.34	1	1	6th Plan
Electronic Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$362.11	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$41.57	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	5,015.53	1	\$32.55	15%	75%	\$0.01	50	50	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	1,532.84	10	\$153.18	15%	75%	\$0.01	15	16	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	857.27	20	\$182.70	15%	75%	\$0.02	8	9	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$1,757.41	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	465.10	10	\$117.07	15%	75%	\$0.03	4	5	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	9,118.25	10	\$5,646.46	15%	75%	\$0.07	85	96	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	560.09	10	\$626.93	15%	75%	\$0.07	4	7	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	4,870.24	10	\$5,738.67	15%	75%	\$0.08	35	62	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$54.96	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$6.69	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$39.32	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$1,347.41	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,383.72	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$40.77	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,985.26	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$17,908.06	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	629.37	5	\$170.35	15%	75%	\$0.07	6	6	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	6,229.24	10	\$3,406.65	15%	75%	\$0.08	62	62	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,191.78	5	\$1,735.11	15%	75%	\$0.33	58	60	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,978.83	15	\$945.94	15%	50%	\$0.06	12	12	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	3,795.43	18	\$2,270.29	15%	50%	\$0.06	22	22	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	1,332.34	3	\$126.14	15%	50%	\$0.04	8	8	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	3,903.01	15	\$1,891.88	15%	50%	\$0.06	23	23	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	536.36	3	\$1,323.85	5%	39%	\$0.07	75	15	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	1,836.54	3	\$1,380.61	0%	5%	\$0.01	8	8	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	630.41	10	\$6,399.14	15%	24%	\$0.04	5	5	6th Plan
Electronic Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$41.57	0%	0%	\$10.00	0	0	PA - TRM
Electronic Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	5,015.53	1	\$32.55	15%	75%	\$0.01	15	15	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	1,599.96	10	\$153.18	15%	75%	\$0.01	5	5	6th Plan
Electronic Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	907.11	20	\$182.70	15%	75%	\$0.02	3	3	6th Plan
Electronic Equipment Mfg	Process	Commissioning	per Facility	New	644.88	3	\$1,323.85	5%	39%	\$0.07	18	9	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$1,757.41	0%	0%	\$10.00	0	0	VT - TRM
Electronic Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	487.36	10	\$117.07	15%	75%	\$0.03	1	1	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	9,569.23	10	\$5,646.46	15%	75%	\$0.07	29	29	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	602.01	10	\$626.93	15%	75%	\$0.07	2	2	6th Plan
Electronic Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	5,228.55	10	\$5,738.67	15%	75%	\$0.08	15	15	6th Plan
Electronic Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$54.96	0%	0%	\$10.00	0	0	MT - IRP 2013
Electronic Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$6.69	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$39.32	0%	0%	\$10.00	0	0	OPA - TRM
Electronic Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$1,347.41	0%	0%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,383.72	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$40.77	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,985.26	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$17,908.06	0%	0%	\$10.00	0	0	6th Plan
Electronic Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$170.35	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$3,406.65	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	1,033.33	5	\$1,735.11	15%	75%	\$0.37	13	13	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,982.04	15	\$945.94	15%	50%	\$0.06	4	4	Developed from RTF
Electronic Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	3,811.36	18	\$2,270.29	15%	50%	\$0.06	7	7	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	1,332.89	3	\$126.14	15%	50%	\$0.04	2	2	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	3,912.71	15	\$1,891.88	15%	50%	\$0.06	7	7	AEG study for State of New Mexico
Electronic Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Electronic Equipment Mfg	Process	Strategic Energy Management	per Facility	New	1,617.05	3	\$1,115.14	0%	5%	\$0.01	2	2	BEST Simulation
Electronic Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	141.35	32	\$18,666.86	15%	52%	\$0.34	1	1	6th Plan
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$44,393.83	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	940.11	3	\$1,380.61	0%	5%	\$0.01	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	324.42	10	\$6,399.14	15%	24%	\$0.04	0	1	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	344.35	15	\$73.85	15%	35%	\$0.02	1	1	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	10,705.88	20	\$11,602.63	100%	at stock turnover	\$0.11	20	21	BEST Simulation
Electronic Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$29,338.35	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Electronic Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	337.70	3	\$1,115.14	0%	5%	\$0.01	0	0	BEST Simulation
Electronic Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	31.85	32	\$18,666.86	15%	52%	\$0.34	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	123.75	15	\$34.31	15%	35%	\$0.03	0	0	6th Plan
Electronic Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	5,977.52	20	\$7,220.27	100%	at stock turnover	\$0.13	3	3	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	26,772.06	23	\$68,813.30	2%	at stock turnover	\$0.17	8	8	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	15,329.94	23	\$8,483.93	6%	at stock turnover	\$0.06	10	10	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,845.42	10	\$2,470.10	15%	45%	\$0.04	3	3	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,063.85	15	\$1,330.32	15%	60%	\$0.07	1	1	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	384.08	15	\$333.42	15%	75%	\$0.09	0	0	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	13,132.17	15	\$33,307.73	15%	50%	\$0.25	12	14	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	11,603.81	12	\$21,416.14	15%	50%	\$0.22	11	13	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	Existing	3,434.90	15	\$45,488.68	20%	50%	\$0.17	3	3	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	25,838.58	23	\$61,984.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	10,701.93	18	\$15,449.78	15%	75%	\$0.10	3	3	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	764.35	18	\$1,638.12	15%	25%	\$0.07	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	HVAC - Economizer	per Facility	Existing	4,666.92	10	\$10,231.29	18%	30%	\$0.10	2	1	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	7,019.78	45	\$199,562.42	15%	25%	\$0.16	2	2	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,191.97	20	\$3,112.72	15%	25%	\$0.07	1	1	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-142.79	45	\$27,739.10	45%	50%	\$0.06	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	20,971.14	23	\$70,603.98	4%	at stock turnover	\$0.35	2	2	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,162.44	3	\$3,122.28	0%	18%	\$0.03	2	2	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$17.70	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,067.90	10	\$4,059.50	15%	24%	\$0.05	0	0	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	24,471.23	23	\$12,836.56	3%	at stock turnover	\$0.05	8	8	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	6,857.79	10	\$1,990.89	15%	45%	\$0.04	1	1	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,247.01	4	\$1,343.06	15%	50%	\$0.03	2	2	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,821.89	15	\$1,881.67	15%	60%	\$0.07	1	1	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	367.25	15	\$330.92	15%	75%	\$0.09	0	0	BEST Simulation
Food Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	20,270.23	23	\$51,567.68	2%	at stock turnover	\$0.15	3	3	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,079.35	23	\$34,556.98	6%	at stock turnover	\$3.33	0	0	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,008.47	10	\$1,928.83	15%	45%	\$0.04	1	1	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,458.08	15	\$929.97	15%	60%	\$0.07	0	0	BEST Simulation
Food Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$270.93	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	7,430.65	15	\$33,307.73	15%	50%	\$0.44	2	2	BEST Simulation
Food Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	6,561.26	12	\$14,153.16	15%	50%	\$0.25	2	2	Environment Design Guide, November 2007 (PDF)
Food Mfg	Cooling	Energy Management System	per Facility	New	1,947.70	15	\$37,730.02	20%	50%	\$0.16	1	1	BEST Simulation
Food Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	19,644.28	23	\$46,449.93	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	7,006.11	18	\$11,349.73	15%	75%	\$0.11	1	1	AEG research & analysis
Food Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	679.62	18	\$587.71	15%	25%	\$0.09	0	0	BEST Simulation
Food Mfg	Cooling	HVAC - Economizer	per Facility	New	2,555.67	10	\$6,040.14	18%	30%	\$0.11	1	0	DEER
Food Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	463.64	45	\$159,574.22	15%	25%	\$0.14	0	0	BEST Simulation
Food Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,584.95	20	\$1,681.94	15%	25%	\$0.09	0	0	BEST Simulation
Food Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-57.97	45	\$3,305.42	45%	50%	\$0.06	0	0	BEST Simulation
Food Mfg	Cooling	RTU - EER 12.0	per Facility	New	12,397.76	23	\$41,238.85	4%	at stock turnover	\$0.35	1	1	BEST Simulation
Food Mfg	Cooling	Strategic Energy Management	per Facility	New	1,786.60	3	\$2,661.78	0%	18%	\$0.03	0	0	BEST Simulation
Food Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$47.41	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Cooling	Transformer - High Efficiency	per Facility	New	152.47	32	\$12,376.78	15%	52%	\$0.35	0	0	6th Plan
Food Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	14,989.87	23	\$9,590.29	3%	at stock turnover	\$0.07	3	3	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,501.76	10	\$1,217.63	15%	45%	\$0.04	0	0	DEER
Food Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,275.90	4	\$829.35	15%	50%	\$0.04	0	0	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,497.53	15	\$1,193.46	15%	60%	\$0.07	0	0	BEST Simulation
Food Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$419.35	15%	75%	\$10.00	0	0	BEST Simulation
Food Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	124.03	15	\$45,488.68	20%	50%	\$0.17	1	2	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	408.76	5	\$76.79	15%	25%	\$0.03	2	3	Illinois TRM
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	160.50	10	\$179.92	33%	60%	\$0.11	2	3	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,159.38	10	\$1,228.72	15%	30%	\$0.06	12	24	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	65	66	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	33	33	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	46	92	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	5	14	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$3,122.28	0%	18%	\$0.03	1	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.51	10	\$4,059.50	15%	24%	\$0.05	0	0	6th Plan
Food Mfg	Exterior Lighting	Energy Management System	per Facility	New	108.37	15	\$37,730.02	20%	50%	\$0.16	0	1	BEST Simulation
Food Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	355.86	5	\$76.45	15%	25%	\$0.03	0	1	Illinois TRM
Food Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	145.83	10	\$110.24	44%	60%	\$0.06	0	0	AEG research & analysis
Food Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,880.83	10	\$1,222.92	15%	30%	\$0.06	3	5	AEG research & analysis
Food Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	29	32	AEO 2013
Food Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	14	16	AEO 2013
Food Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	20	39	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	1	3	EIA 2011/Developed from RTF
Food Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$2,661.78	0%	18%	\$0.03	0	0	BEST Simulation
Food Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.81	32	\$12,376.78	15%	52%	\$0.35	0	0	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	7,229.08	23	\$52,558.55	2%	at stock turnover	\$0.17	2	2	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$21,416.14	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	Existing	25,412.93	15	\$45,488.68	20%	50%	\$0.17	19	19	BEST Simulation
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,462.15	23	\$40,237.21	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	4,480.58	18	\$15,449.78	15%	75%	\$0.10	1	1	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,826.95	18	\$1,638.12	15%	25%	\$0.07	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	102,565.09	45	\$199,562.42	15%	25%	\$0.16	26	26	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,947.42	20	\$3,112.72	15%	25%	\$0.07	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	38,565.94	45	\$27,739.10	45%	50%	\$0.06	5	5	BEST Simulation
Food Mfg	Heating	Strategic Energy Management	per Facility	Existing	22,437.82	3	\$3,122.28	0%	18%	\$0.03	10	10	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$17.70	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	7,718.02	10	\$4,059.50	15%	24%	\$0.05	2	2	6th Plan
Food Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	11,926.74	23	\$45,732.32	2%	at stock turnover	\$0.15	2	2	BEST Simulation
Food Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,153.16	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Heating	Energy Management System	per Facility	New	23,886.79	15	\$37,730.02	20%	50%	\$0.16	6	6	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	8,387.95	23	\$30,153.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Food Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,903.15	18	\$11,349.73	15%	75%	\$0.11	0	0	AEG research & analysis
Food Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-38.59	18	\$587.71	15%	25%	\$0.09	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	96,741.45	45	\$159,574.22	15%	25%	\$0.14	8	8	BEST Simulation
Food Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	189.69	20	\$1,681.94	15%	25%	\$0.09	0	0	BEST Simulation
Food Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,145.25	45	\$3,305.42	45%	50%	\$0.06	0	0	BEST Simulation
Food Mfg	Heating	Strategic Energy Management	per Facility	New	21,077.92	3	\$2,661.78	0%	18%	\$0.03	3	3	BEST Simulation
Food Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$47.41	10%	10%	\$10.00	0	0	BEST Simulation
Food Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,940.59	32	\$12,376.78	15%	52%	\$0.35	1	1	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	Existing	671.19	15	\$45,488.68	20%	50%	\$0.17	8	12	BEST Simulation
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	500	507	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,354.89	5	\$520.91	5%	40%	\$0.03	10	21	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,274.05	5	\$694.52	15%	50%	\$0.03	14	29	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,188.48	12	\$4,669.81	3%	25%	\$0.10	35	69	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	724.21	16	\$85.98	1%	3%	\$0.01	1	1	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,824.84	10	\$1,024.17	7%	60%	\$0.02	75	135	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$5,206.98	15%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,442.46	8	\$403.60	7%	15%	\$0.03	5	9	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	278.00	5	\$21.80	10%	25%	\$0.01	0	1	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	254	271	AEO 2013
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	52	104	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	6	16	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	628.94	3	\$3,122.28	0%	18%	\$0.03	4	10	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	209.54	10	\$4,059.50	15%	24%	\$0.05	1	1	6th Plan
Food Mfg	Interior Lighting	Energy Management System	per Facility	New	629.47	15	\$37,730.02	20%	50%	\$0.16	2	3	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	219	244	AEO 2013
Food Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,952.88	5	\$520.40	5%	40%	\$0.04	3	4	Illinois TRM
Food Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,718.27	5	\$693.84	15%	50%	\$0.04	4	6	Illinois TRM
Food Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,921.33	12	\$4,389.86	4%	25%	\$0.09	10	15	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	653.81	16	\$85.64	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,354.64	10	\$1,052.83	22%	60%	\$0.02	12	18	Ameren Missouri TRM
Food Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$5,206.98	18%	30%	\$10.00	0	0	DEER
Food Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,346.51	8	\$392.89	7%	15%	\$0.03	1	2	CA - DEER
Food Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	196.00	5	\$21.63	10%	25%	\$0.01	0	0	AEG research & analysis
Food Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	112	123	AEO 2013
Food Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	23	44	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	1	3	EIA 2011/Developed from RTF
Food Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	586.24	3	\$2,661.78	0%	18%	\$0.03	1	2	BEST Simulation
Food Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.15	32	\$12,376.78	15%	52%	\$0.35	0	0	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$5.29	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,624.99	3	\$2,412.27	10%	37%	\$0.07	28	28	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,290.84	3	\$3,122.28	0%	18%	\$0.03	16	16	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	787.99	10	\$4,059.50	15%	24%	\$0.05	3	3	6th Plan
Food Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$5.29	0%	0%	\$10.00	0	0	MI - TRM
Food Mfg	Miscellaneous	Commissioning	per Facility	New	2,630.55	3	\$2,412.27	10%	37%	\$0.07	8	8	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,290.84	3	\$2,661.78	0%	18%	\$0.03	5	5	BEST Simulation
Food Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	213.91	32	\$12,376.78	15%	52%	\$0.35	1	1	6th Plan
Food Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	8,181.98	10	\$249.09	15%	75%	\$0.00	99	99	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	9,134.52	15	\$1,604.51	15%	50%	\$0.02	62	66	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,019.40	15	\$699.13	15%	38%	\$0.04	9	9	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	236.35	5	\$42.97	15%	50%	\$0.04	2	2	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	3,890.58	20	\$3,004.13	15%	50%	\$0.07	25	29	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,022.18	15	\$704.42	15%	38%	\$0.04	9	10	MI - TRM
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	4,294.08	10	\$1,563.58	15%	50%	\$0.05	29	32	VT - TRM
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$317.50	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	3,466.53	15	\$1,656.84	8%	38%	\$0.05	20	22	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,941.36	3	\$176.74	8%	38%	\$0.03	11	12	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	5,466.41	15	\$2,650.94	8%	38%	\$0.05	31	35	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$84.67	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	21,318.69	10	\$2,799.92	8%	38%	\$0.02	126	128	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	Existing	7,254.94	15	\$816.65	8%	38%	\$0.01	44	44	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	Existing	3,676.57	3	\$232.28	8%	38%	\$0.02	21	22	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	10,971.57	10	\$2,090.58	8%	38%	\$0.03	63	66	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	831.17	8	\$1,141.43	10%	50%	\$0.22	26	27	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	589.72	8	\$404.71	5%	25%	\$0.11	9	10	Developed from RTF
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$33.27	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$2,215.04	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$8.47	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	15,070.14	17	\$1,029.58	5%	6%	\$0.01	12	12	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	2,332.14	10	\$483.70	15%	36%	\$0.03	38	40	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	15,031.40	17	\$2,472.47	25%	44%	\$0.02	228	229	RSMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,968.32	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,434.92	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	9,880.31	10	\$1,892.38	8%	38%	\$0.03	58	60	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	Existing	9,980.17	15	\$2,307.20	8%	38%	\$0.03	60	60	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	5,169.87	3	\$656.25	8%	38%	\$0.05	30	31	Scaled from Optimization
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	16,060.25	12	\$6,408.86	8%	38%	\$0.05	93	97	6th Plan
Food Mfg	Motors	Retrocommissioning	per Facility	Existing	5,682.04	3	\$2,412.27	10%	37%	\$0.07	118	123	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	Existing	5,035.00	3	\$3,122.28	0%	18%	\$0.03	71	75	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$832.65	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	1,726.96	10	\$4,059.50	15%	24%	\$0.05	13	13	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$839.21	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Commissioning	per Facility	New	5,015.17	3	\$2,412.27	10%	37%	\$0.07	41	41	Energy Management Program Design for PC
Food Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	8,181.98	10	\$249.09	15%	75%	\$0.00	30	30	MI - TRM
Food Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	9,130.11	15	\$1,604.51	15%	50%	\$0.02	20	20	OH - TRM
Food Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,027.27	15	\$699.13	15%	38%	\$0.04	3	3	MI - TRM
Food Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	237.41	5	\$42.97	15%	50%	\$0.04	1	1	MI - TRM
Food Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	3,921.34	20	\$3,004.13	15%	50%	\$0.07	8	8	MI - TRM
Food Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,030.68	15	\$704.42	15%	38%	\$0.04	3	3	MI - TRM
Food Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	4,316.30	10	\$1,563.58	15%	50%	\$0.05	9	9	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$317.50	15%	30%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Compressed Air - System Controls	per Facility	New	3,411.12	15	\$1,656.84	8%	38%	\$0.05	6	6	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	1,940.95	3	\$176.74	8%	38%	\$0.03	4	4	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	5,580.74	15	\$2,650.94	8%	38%	\$0.05	10	10	AEG study for State of New Mexico
Food Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$84.67	15%	50%	\$10.00	0	0	VT - TRM
Food Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	21,143.38	10	\$2,799.92	8%	38%	\$0.02	39	39	6th Plan
Food Mfg	Motors	Fan System - Controls	per Facility	New	7,147.01	15	\$816.65	8%	38%	\$0.01	13	13	Scaled from Optimization
Food Mfg	Motors	Fan System - Maintenance	per Facility	New	3,602.39	3	\$232.28	8%	38%	\$0.02	7	7	Scaled from Optimization
Food Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	10,727.40	10	\$2,090.58	8%	38%	\$0.03	20	20	6th Plan
Food Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	731.85	8	\$1,141.43	10%	50%	\$0.25	9	9	Developed from RTF
Food Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	519.27	8	\$404.71	5%	25%	\$0.13	3	3	Developed from RTF
Food Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$33.27	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$2,215.04	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$8.47	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	13,382.82	17	\$1,029.58	5%	6%	\$0.01	4	4	E3T Website
Food Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	2,042.95	10	\$483.70	15%	36%	\$0.03	13	13	6th Plan
Food Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	13,372.49	17	\$1,483.48	25%	44%	\$0.01	78	78	RSMeans 2013
Food Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,968.32	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,434.92	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	9,799.06	10	\$1,892.38	8%	38%	\$0.03	18	18	6th Plan
Food Mfg	Motors	Pumping System - Controls	per Facility	New	9,937.01	15	\$2,307.20	8%	38%	\$0.03	18	18	Scaled from Optimization
Food Mfg	Motors	Pumping System - Maintenance	per Facility	New	5,115.63	3	\$656.25	8%	38%	\$0.05	9	9	Scaled from Optimization
Food Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	15,868.20	12	\$6,408.86	8%	38%	\$0.05	29	29	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Motors	Strategic Energy Management	per Facility	New	4,450.88	3	\$2,661.78	0%	18%	\$0.03	25	25	BEST Simulation
Food Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$832.65	15%	25%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Motors	Transformer - High Efficiency	per Facility	New	406.83	32	\$12,376.78	15%	52%	\$0.35	5	5	6th Plan
Food Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$839.21	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$588.05	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$6.69	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$31.45	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$37.51	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$486.32	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$24.05	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,159.76	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$128.78	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,178.72	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$61.17	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$1.86	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$10.88	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$372.87	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$4,024.15	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$68.83	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,322.01	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$30,232.10	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	Existing	99.33	5	\$27.01	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	984.69	10	\$540.13	15%	75%	\$0.08	12	12	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	Existing	2,070.41	5	\$2,929.20	15%	75%	\$0.33	122	125	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	7,723.64	15	\$3,814.39	15%	50%	\$0.06	54	55	Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Refrigeration - System Controls	per Facility	Existing	15,234.91	18	\$9,154.55	15%	50%	\$0.06	105	109	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	5,347.96	3	\$508.59	15%	50%	\$0.04	38	38	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	15,886.01	15	\$7,628.77	15%	50%	\$0.06	111	112	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	Existing	1,212.09	3	\$2,412.27	10%	37%	\$0.07	163	33	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	Existing	3,134.11	3	\$3,122.28	0%	18%	\$0.03	57	57	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	Existing	1,074.35	10	\$4,059.50	15%	24%	\$0.05	10	10	6th Plan
Food Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$588.05	0%	0%	\$10.00	0	0	PA - TRM
Food Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$6.69	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$31.45	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$37.51	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Commissioning	per Facility	New	1,870.58	3	\$2,412.27	10%	37%	\$0.07	50	24	Energy Management Program Design for PC
Food Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$486.32	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$24.05	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,159.76	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$128.78	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,178.72	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$61.17	0%	0%	\$10.00	0	0	MT - IRP 2013
Food Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$1.86	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$10.88	0%	0%	\$10.00	0	0	OPA - TRM
Food Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$372.87	0%	0%	\$10.00	0	0	VT - TRM
Food Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$4,024.15	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$68.83	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,322.01	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$30,232.10	0%	0%	\$10.00	0	0	6th Plan
Food Mfg	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$27.01	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$540.13	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Food Mfg	Process	Process - Timers and Controls	per Facility	New	2,515.35	5	\$2,929.20	15%	75%	\$0.27	37	37	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Food Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	7,964.47	15	\$3,814.39	15%	50%	\$0.06	17	17	Developed from RTF
Food Mfg	Process	Refrigeration - System Controls	per Facility	New	15,315.33	18	\$9,154.55	15%	50%	\$0.06	33	33	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Maintenance	per Facility	New	5,355.94	3	\$508.59	15%	50%	\$0.04	12	12	AEG study for State of New Mexico
Food Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	15,722.53	15	\$7,628.77	15%	50%	\$0.06	34	34	AEG study for State of New Mexico
Food Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Food Mfg	Process	Strategic Energy Management	per Facility	New	3,809.28	3	\$2,661.78	0%	18%	\$0.03	17	17	BEST Simulation
Food Mfg	Process	Transformer - High Efficiency	per Facility	New	339.95	32	\$12,376.78	15%	52%	\$0.35	3	3	6th Plan
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$21,416.14	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	452.91	3	\$3,122.28	0%	18%	\$0.03	1	2	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	155.80	10	\$4,059.50	15%	24%	\$0.05	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	166.41	15	\$35.64	15%	35%	\$0.02	1	1	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,164.65	20	\$5,597.25	100%	at stock turnover	\$0.11	12	12	BEST Simulation
Food Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,153.16	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Food Mfg	Ventilation	Strategic Energy Management	per Facility	New	162.91	3	\$2,661.78	0%	18%	\$0.03	0	0	BEST Simulation
Food Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	15.31	32	\$12,376.78	15%	52%	\$0.35	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	59.49	15	\$16.55	15%	35%	\$0.03	0	0	6th Plan
Food Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,883.63	20	\$3,483.14	100%	at stock turnover	\$0.13	2	2	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	37,190.17	23	\$95,591.38	2%	at stock turnover	\$0.17	15	15	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	21,295.44	23	\$11,785.38	6%	at stock turnover	\$0.06	19	19	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	12,343.62	10	\$3,431.36	15%	45%	\$0.04	5	6	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,880.04	15	\$1,848.05	15%	60%	\$0.07	2	2	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	535.97	15	\$463.14	15%	75%	\$0.09	0	1	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	18,325.19	15	\$73,944.71	15%	50%	\$0.40	23	26	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	Existing	16,192.59	12	\$29,750.06	15%	50%	\$0.22	20	25	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	Existing	4,793.25	15	\$62,577.73	20%	50%	\$0.18	5	6	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	35,893.43	23	\$86,104.57	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	Existing	14,934.18	18	\$21,461.92	15%	75%	\$0.10	5	6	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,066.62	18	\$2,275.58	15%	25%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	Existing	6,512.53	10	\$14,212.65	18%	30%	\$0.10	4	2	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	9,795.82	45	\$277,220.38	15%	25%	\$0.16	4	4	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,058.82	20	\$4,324.00	15%	25%	\$0.07	1	1	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-199.26	45	\$38,533.48	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	Existing	29,131.87	23	\$98,078.89	4%	at stock turnover	\$0.35	4	4	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	Existing	4,393.08	3	\$951.09	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$78.47	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	Existing	1,490.22	10	\$4,413.94	15%	24%	\$0.04	1	1	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	33,994.00	23	\$17,831.79	3%	at stock turnover	\$0.05	16	15	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,569.76	10	\$2,765.69	15%	45%	\$0.04	2	2	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	14,299.37	4	\$1,865.72	15%	50%	\$0.03	3	4	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,937.81	15	\$2,613.91	15%	60%	\$0.07	1	1	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	512.47	15	\$459.66	15%	75%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	28,158.20	23	\$71,634.79	2%	at stock turnover	\$0.15	6	6	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	12,996.99	23	\$17,048.47	6%	at stock turnover	\$0.14	7	7	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,690.79	10	\$2,679.41	15%	45%	\$0.04	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,808.29	15	\$1,291.87	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,202.87	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	9,899.50	15	\$73,944.71	15%	50%	\$0.70	4	4	BEST Simulation
Industrial Machinery	Cooling	Destratification Fans (HVLS)	per Facility	New	8,740.70	12	\$19,660.76	15%	50%	\$0.25	4	4	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Cooling	Energy Management System	per Facility	New	2,594.63	15	\$51,802.36	20%	50%	\$0.16	1	1	BEST Simulation
Industrial Machinery	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	27,288.68	23	\$64,525.51	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Heat Pump - Maintenance	per Facility	New	9,766.20	18	\$15,766.35	15%	75%	\$0.11	1	1	AEG research & analysis
Industrial Machinery	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	905.65	18	\$816.42	15%	25%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	HVAC - Economizer	per Facility	New	3,369.77	10	\$8,390.58	18%	30%	\$0.11	1	1	DEER
Industrial Machinery	Cooling	Insulation - Ceiling - R-38	per Facility	New	617.63	45	\$221,671.15	15%	25%	\$0.14	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Ducting - R-8	per Facility	New	2,112.06	20	\$2,336.38	15%	25%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-77.24	45	\$4,591.66	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Cooling	RTU - EER 12.0	per Facility	New	17,222.24	23	\$57,286.58	4%	at stock turnover	\$0.35	2	2	BEST Simulation
Industrial Machinery	Cooling	Strategic Energy Management	per Facility	New	2,370.91	3	\$773.28	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$210.52	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Cooling	Transformer - High Efficiency	per Facility	New	203.13	32	\$12,944.74	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	20,823.05	23	\$13,322.27	3%	at stock turnover	\$0.07	6	6	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,881.26	10	\$1,691.48	15%	45%	\$0.04	0	0	DEER
Industrial Machinery	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,354.38	4	\$1,152.12	15%	50%	\$0.04	1	1	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,087.46	15	\$1,657.93	15%	60%	\$0.07	0	0	BEST Simulation
Industrial Machinery	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$1,862.06	15%	75%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	Existing	124.58	15	\$62,577.73	20%	50%	\$0.18	2	3	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	410.59	5	\$76.78	15%	25%	\$0.03	2	4	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.21	10	\$179.88	33%	60%	\$0.11	2	5	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,169.05	10	\$1,228.72	15%	30%	\$0.06	17	33	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	88	89	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	44	45	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	62	124	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	7	19	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$951.09	0%	5%	\$0.01	0	1	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.69	10	\$4,413.94	15%	24%	\$0.04	0	0	6th Plan
Industrial Machinery	Exterior Lighting	Energy Management System	per Facility	New	108.74	15	\$51,802.36	20%	50%	\$0.16	1	1	BEST Simulation
Industrial Machinery	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.08	5	\$76.41	15%	25%	\$0.03	1	1	Illinois TRM
Industrial Machinery	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.32	10	\$110.24	44%	60%	\$0.06	0	1	AEG research & analysis
Industrial Machinery	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,887.22	10	\$1,222.89	15%	30%	\$0.06	5	7	AEG research & analysis
Industrial Machinery	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	39	43	AEO 2013
Industrial Machinery	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	20	21	AEO 2013
Industrial Machinery	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	28	53	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	1	4	EIA 2011/Developed from RTF
Industrial Machinery	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$773.28	0%	5%	\$0.01	0	0	BEST Simulation
Industrial Machinery	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.84	32	\$12,944.74	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	10,042.21	23	\$73,011.25	2%	at stock turnover	\$0.17	4	4	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$29,750.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	Existing	35,463.64	15	\$62,577.73	20%	50%	\$0.18	36	37	BEST Simulation
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,420.28	23	\$55,895.16	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	Existing	6,252.63	18	\$21,461.92	15%	75%	\$0.10	2	2	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,549.50	18	\$2,275.58	15%	25%	\$0.07	1	1	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	Existing	143,129.40	45	\$277,220.38	15%	25%	\$0.16	49	49	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,717.62	20	\$4,324.00	15%	25%	\$0.07	1	1	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	53,818.73	45	\$38,533.48	45%	50%	\$0.06	9	9	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	Existing	31,169.29	3	\$951.09	0%	5%	\$0.01	5	5	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$78.47	10%	10%	\$10.00	0	0	BEST Simulation
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	Existing	10,770.50	10	\$4,413.94	15%	24%	\$0.04	3	3	6th Plan
Industrial Machinery	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	16,567.93	23	\$63,528.65	2%	at stock turnover	\$0.15	4	4	BEST Simulation
Industrial Machinery	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$19,660.76	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Heating	Energy Management System	per Facility	New	33,298.01	15	\$51,802.36	20%	50%	\$0.16	11	11	BEST Simulation
Industrial Machinery	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	11,652.05	23	\$41,887.03	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Industrial Machinery	Heating	Heat Pump - Maintenance	per Facility	New	4,046.96	18	\$15,766.35	15%	75%	\$0.11	0	0	AEG research & analysis
Industrial Machinery	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-53.79	18	\$816.42	15%	25%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Ceiling - R-38	per Facility	New	134,857.21	45	\$221,671.15	15%	25%	\$0.14	14	14	BEST Simulation
Industrial Machinery	Heating	Insulation - Ducting - R-8	per Facility	New	264.43	20	\$2,336.38	15%	25%	\$0.09	0	0	BEST Simulation
Industrial Machinery	Heating	Insulation - Wall Cavity - R-23	per Facility	New	7,172.46	45	\$4,591.66	45%	50%	\$0.06	0	0	BEST Simulation
Industrial Machinery	Heating	Strategic Energy Management	per Facility	New	29,280.21	3	\$773.28	0%	5%	\$0.01	2	2	BEST Simulation
Industrial Machinery	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$210.52	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Heating	Transformer - High Efficiency	per Facility	New	2,705.17	32	\$12,944.74	15%	52%	\$0.34	1	1	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	Existing	674.18	15	\$62,577.73	20%	50%	\$0.18	10	16	BEST Simulation
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	676	686	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,466.49	5	\$520.94	5%	40%	\$0.03	14	30	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,187.52	5	\$694.52	15%	50%	\$0.03	18	39	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,207.18	12	\$4,669.85	3%	25%	\$0.10	47	93	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	722.96	16	\$85.99	1%	3%	\$0.01	1	2	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,816.54	10	\$1,024.21	7%	60%	\$0.02	101	182	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$11,559.73	15%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,448.91	8	\$403.56	7%	15%	\$0.03	6	12	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	277.54	5	\$21.80	10%	25%	\$0.01	1	2	AEG research & analysis
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	344	366	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	70	140	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	8	22	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	Existing	697.71	3	\$951.09	0%	5%	\$0.01	2	4	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.47	10	\$4,413.94	15%	24%	\$0.04	1	2	6th Plan
Industrial Machinery	Interior Lighting	Energy Management System	per Facility	New	631.60	15	\$51,802.36	20%	50%	\$0.16	3	5	BEST Simulation
Industrial Machinery	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	296	330	AEO 2013
Industrial Machinery	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,045.65	5	\$520.38	5%	40%	\$0.04	4	6	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,641.39	5	\$693.87	15%	50%	\$0.04	5	8	Illinois TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,934.63	12	\$4,389.88	4%	25%	\$0.09	14	20	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	652.96	16	\$85.62	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Industrial Machinery	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,348.94	10	\$1,052.88	22%	60%	\$0.02	17	24	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$11,559.73	18%	30%	\$10.00	0	0	DEER
Industrial Machinery	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,351.09	8	\$392.84	7%	15%	\$0.03	2	3	CA - DEER
Industrial Machinery	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	195.75	5	\$21.62	10%	25%	\$0.01	0	0	AEG research & analysis
Industrial Machinery	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	151	166	AEO 2013
Industrial Machinery	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	31	60	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	1	4	EIA 2011/Developed from RTF
Industrial Machinery	Interior Lighting	Strategic Energy Management	per Facility	New	629.60	3	\$773.28	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.33	32	\$12,944.74	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$23.50	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	Existing	1,921.85	3	\$994.89	5%	39%	\$0.07	35	35	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,669.57	3	\$951.09	0%	5%	\$0.01	4	4	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	576.92	10	\$4,413.94	15%	24%	\$0.04	3	3	6th Plan
Industrial Machinery	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$23.50	0%	0%	\$10.00	0	0	MI - TRM
Industrial Machinery	Miscellaneous	Commissioning	per Facility	New	1,923.85	3	\$994.89	5%	39%	\$0.07	10	10	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Miscellaneous	Strategic Energy Management	per Facility	New	1,669.57	3	\$773.28	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Miscellaneous	Transformer - High Efficiency	per Facility	New	156.10	32	\$12,944.74	15%	52%	\$0.34	1	1	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	8,246.32	10	\$251.02	15%	75%	\$0.00	134	134	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	9,190.31	15	\$1,617.14	15%	50%	\$0.02	85	89	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,044.55	15	\$704.67	15%	38%	\$0.04	12	13	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	239.29	5	\$43.33	15%	50%	\$0.04	2	2	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	3,938.96	20	\$3,027.80	15%	50%	\$0.07	35	40	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,047.36	15	\$709.94	15%	38%	\$0.04	12	13	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	4,347.53	10	\$1,575.88	15%	50%	\$0.05	39	43	VT - TRM
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$352.43	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	Existing	3,428.61	15	\$1,669.86	8%	38%	\$0.05	26	30	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,958.54	3	\$178.10	8%	38%	\$0.03	15	17	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	5,615.46	15	\$2,671.80	8%	38%	\$0.05	43	48	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$93.98	15%	50%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	14,346.66	10	\$1,867.60	8%	38%	\$0.02	116	117	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	Existing	4,830.71	15	\$544.72	8%	38%	\$0.01	39	39	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	Existing	2,448.06	3	\$154.98	8%	38%	\$0.02	19	20	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	7,305.47	10	\$1,394.50	8%	38%	\$0.03	56	59	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	397.32	8	\$582.69	10%	50%	\$0.23	16	18	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	281.90	8	\$206.57	5%	25%	\$0.12	6	6	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$147.74	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,614.32	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$6.20	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	7,281.85	17	\$525.54	5%	6%	\$0.01	8	8	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,115.99	10	\$246.89	15%	36%	\$0.03	25	26	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	Existing	7,185.05	17	\$1,262.08	25%	44%	\$0.02	146	148	RSMeans 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,163.36	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,045.73	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	2,033.15	10	\$390.12	8%	38%	\$0.03	16	17	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	Existing	2,053.70	15	\$475.64	8%	38%	\$0.03	17	17	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	Existing	1,069.92	3	\$135.24	8%	38%	\$0.05	8	9	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	3,325.77	12	\$1,321.10	8%	38%	\$0.05	26	27	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	Existing	2,720.31	3	\$994.89	5%	39%	\$0.07	96	100	Energy Management Program Design for PC
Industrial Machinery	Motors	Strategic Energy Management	per Facility	Existing	2,522.97	3	\$951.09	0%	5%	\$0.01	14	14	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$606.84	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	Existing	832.27	10	\$4,413.94	15%	24%	\$0.04	8	8	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$374.23	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Commissioning	per Facility	New	2,533.25	3	\$994.89	5%	39%	\$0.07	36	36	Energy Management Program Design for PC
Industrial Machinery	Motors	Compressed Air - Air Usage Reduction	per Facility	New	8,246.32	10	\$251.02	15%	75%	\$0.00	41	41	MI - TRM
Industrial Machinery	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	9,189.65	15	\$1,617.14	15%	50%	\$0.02	27	27	OH - TRM
Industrial Machinery	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,050.31	15	\$704.67	15%	38%	\$0.04	4	4	MI - TRM
Industrial Machinery	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	240.11	5	\$43.33	15%	50%	\$0.04	1	1	MI - TRM
Industrial Machinery	Motors	Compressed Air - Outside Air Intake	per Facility	New	3,965.84	20	\$3,027.80	15%	50%	\$0.07	11	11	MI - TRM
Industrial Machinery	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,053.75	15	\$709.94	15%	38%	\$0.04	4	4	MI - TRM
Industrial Machinery	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	4,365.34	10	\$1,575.88	15%	50%	\$0.05	13	13	VT - TRM
Industrial Machinery	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$352.43	15%	30%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Compressed Air - System Controls	per Facility	New	3,449.84	15	\$1,669.86	8%	38%	\$0.05	8	8	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Compressed Air - System Maintenance	per Facility	New	1,963.02	3	\$178.10	8%	38%	\$0.03	5	5	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	5,644.12	15	\$2,671.80	8%	38%	\$0.05	14	14	AEG study for State of New Mexico
Industrial Machinery	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$93.98	15%	50%	\$10.00	0	0	VT - TRM
Industrial Machinery	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	14,084.19	10	\$1,867.60	8%	38%	\$0.02	35	35	6th Plan
Industrial Machinery	Motors	Fan System - Controls	per Facility	New	4,760.82	15	\$544.72	8%	38%	\$0.01	12	12	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Maintenance	per Facility	New	2,399.66	3	\$154.98	8%	38%	\$0.02	6	6	Scaled from Optimization
Industrial Machinery	Motors	Fan System - Optimization - Optimized System	per Facility	New	7,145.85	10	\$1,394.50	8%	38%	\$0.03	18	18	6th Plan
Industrial Machinery	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	368.87	8	\$582.69	10%	50%	\$0.25	6	6	Developed from RTF
Industrial Machinery	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	261.72	8	\$206.57	5%	25%	\$0.13	2	2	Developed from RTF
Industrial Machinery	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$147.74	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,614.32	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$6.20	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	6,784.71	17	\$525.54	5%	6%	\$0.01	3	3	E3T Website
Industrial Machinery	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,035.47	10	\$246.89	15%	36%	\$0.03	9	9	6th Plan
Industrial Machinery	Motors	Motors - Variable Frequency Drive	per Facility	New	6,779.48	17	\$757.30	25%	44%	\$0.01	53	53	RSMeans 2013
Industrial Machinery	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,163.36	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,045.73	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,017.27	10	\$390.12	8%	38%	\$0.03	5	5	6th Plan
Industrial Machinery	Motors	Pumping System - Controls	per Facility	New	2,045.66	15	\$475.64	8%	38%	\$0.03	5	5	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Maintenance	per Facility	New	1,058.21	3	\$135.24	8%	38%	\$0.05	3	3	Scaled from Optimization
Industrial Machinery	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,282.45	12	\$1,321.10	8%	38%	\$0.05	8	8	6th Plan
Industrial Machinery	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Motors	Strategic Energy Management	per Facility	New	2,355.18	3	\$773.28	0%	5%	\$0.01	5	5	BEST Simulation
Industrial Machinery	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$606.84	15%	25%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Motors	Transformer - High Efficiency	per Facility	New	205.05	32	\$12,944.74	15%	52%	\$0.34	3	3	6th Plan
Industrial Machinery	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$374.23	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$121.24	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$12.69	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$59.58	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$71.14	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$2,159.23	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$45.58	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,197.38	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$243.98	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,233.28	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$28.10	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$8.18	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	Existing	0.00	10	\$48.31	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$1,655.49	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$806.36	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$13.82	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,527.76	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$6,057.96	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	Existing	163.67	5	\$44.27	15%	75%	\$0.07	3	3	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,619.93	10	\$885.87	15%	75%	\$0.08	26	26	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	Existing	423.74	5	\$586.91	15%	75%	\$0.33	34	34	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	427.21	15	\$204.22	15%	50%	\$0.06	4	4	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	Existing	819.39	18	\$490.11	15%	50%	\$0.06	8	8	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	Existing	287.64	3	\$27.25	15%	50%	\$0.04	3	3	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	842.61	15	\$408.44	15%	50%	\$0.06	8	8	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	Existing	171.06	3	\$994.89	5%	39%	\$0.07	39	8	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	Existing	628.02	3	\$951.09	0%	5%	\$0.01	4	4	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	Existing	216.81	10	\$4,413.94	15%	24%	\$0.04	3	3	6th Plan
Industrial Machinery	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$121.24	0%	0%	\$10.00	0	0	PA - TRM
Industrial Machinery	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$12.69	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$59.58	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$71.14	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Commissioning	per Facility	New	216.69	3	\$994.89	5%	39%	\$0.07	10	5	Energy Management Program Design for PC
Industrial Machinery	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$2,159.23	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$45.58	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,197.38	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$243.98	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,233.28	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$28.10	0%	0%	\$10.00	0	0	MT - IRP 2013
Industrial Machinery	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$8.18	0%	0%	\$10.00	0	0	OPA - TRM
Industrial Machinery	Process	Heat Lamps	per Facility	New	0.00	10	\$48.31	0%	0%	\$10.00	0	0	OPA - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Process	Heat Reclaimers	per Facility	New	0.00	10	\$1,655.49	0%	0%	\$10.00	0	0	VT - TRM
Industrial Machinery	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$806.36	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$13.82	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,527.76	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$6,057.96	0%	0%	\$10.00	0	0	6th Plan
Industrial Machinery	Process	Process - Conductivity Controls	per Facility	New	0.00	5	\$44.27	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	0.00	10	\$885.87	15%	75%	\$10.00	0	0	AEG study for State of New Mexico
Industrial Machinery	Process	Process - Timers and Controls	per Facility	New	410.18	5	\$586.91	15%	75%	\$0.34	8	8	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	427.90	15	\$204.22	15%	50%	\$0.06	1	1	Developed from RTF
Industrial Machinery	Process	Refrigeration - System Controls	per Facility	New	822.83	18	\$490.11	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Maintenance	per Facility	New	287.75	3	\$27.25	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Industrial Machinery	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	844.71	15	\$408.44	15%	50%	\$0.06	2	2	AEG study for State of New Mexico
Industrial Machinery	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Industrial Machinery	Process	Strategic Energy Management	per Facility	New	607.30	3	\$773.28	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Process	Transformer - High Efficiency	per Facility	New	56.11	32	\$12,944.74	15%	52%	\$0.34	1	1	6th Plan
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$29,750.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	Existing	630.00	3	\$951.09	0%	5%	\$0.01	1	1	BEST Simulation
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	Existing	217.41	10	\$4,413.94	15%	24%	\$0.04	0	1	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	230.76	15	\$49.53	15%	35%	\$0.02	1	1	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	7,174.42	20	\$7,775.37	100%	at stock turnover	\$0.11	22	22	BEST Simulation
Industrial Machinery	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$19,660.76	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Industrial Machinery	Ventilation	Strategic Energy Management	per Facility	New	226.31	3	\$773.28	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Industrial Machinery	Ventilation	Transformer - High Efficiency	per Facility	New	21.34	32	\$12,944.74	15%	52%	\$0.34	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	82.93	15	\$23.03	15%	35%	\$0.03	0	0	6th Plan
Industrial Machinery	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,005.77	20	\$4,838.58	100%	at stock turnover	\$0.13	3	3	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	39,132.25	23	\$40,142.09	2%	at stock turnover	\$0.07	5	5	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	22,407.49	23	\$4,949.08	6%	at stock turnover	\$0.02	6	6	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	13,010.91	10	\$1,440.92	15%	45%	\$0.02	2	2	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,012.18	15	\$776.08	15%	60%	\$0.03	1	1	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	560.22	15	\$194.52	15%	75%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	19,040.76	15	\$77,806.11	15%	50%	\$0.40	7	9	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	16,823.40	12	\$12,493.08	15%	50%	\$0.09	7	8	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	Existing	4,979.86	15	\$27,191.49	20%	50%	\$0.07	2	2	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	37,767.79	23	\$36,158.25	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	15,609.95	18	\$9,012.57	15%	75%	\$0.04	2	2	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,106.43	18	\$955.57	15%	25%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	Existing	6,758.10	10	\$5,968.37	18%	30%	\$0.04	1	1	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	10,177.01	45	\$116,414.27	15%	25%	\$0.06	1	1	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	3,177.86	20	\$1,815.81	15%	25%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-208.89	45	\$16,181.55	45%	50%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	Existing	40,979.11	23	\$134,166.63	4%	at stock turnover	\$0.42	4	4	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	Existing	4,510.61	3	\$3,077.34	0%	24%	\$0.03	1	2	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$110.06	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	Existing	1,538.99	10	\$3,021.36	15%	24%	\$0.03	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	35,769.17	23	\$7,488.18	3%	at stock turnover	\$0.02	5	5	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,087.02	10	\$1,161.36	15%	45%	\$0.02	1	1	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	15,072.33	4	\$783.50	15%	50%	\$0.01	1	1	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	4,121.34	15	\$1,097.67	15%	60%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	535.67	15	\$193.03	15%	75%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	29,628.63	23	\$30,081.89	2%	at stock turnover	\$0.06	2	2	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,577.67	23	\$80,724.32	6%	at stock turnover	\$5.33	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	10,293.71	10	\$1,125.16	15%	45%	\$0.02	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,127.82	15	\$542.51	15%	60%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,687.64	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	10,707.35	15	\$77,806.11	15%	50%	\$0.70	1	1	BEST Simulation
Lumber Wood Products	Cooling	Destratification Fans (HVLS)	per Facility	New	9,454.26	12	\$8,256.27	15%	50%	\$0.10	1	1	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Cooling	Energy Management System	per Facility	New	2,806.46	15	\$22,662.76	20%	50%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	28,713.70	23	\$27,096.46	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Heat Pump - Maintenance	per Facility	New	10,224.34	18	\$6,620.84	15%	75%	\$0.04	0	0	AEG research & analysis
Lumber Wood Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	979.36	18	\$342.85	15%	25%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	HVAC - Economizer	per Facility	New	3,672.09	10	\$3,523.52	18%	30%	\$0.04	0	0	DEER
Lumber Wood Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	668.06	45	\$93,087.27	15%	25%	\$0.06	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Cooling	Insulation - Ducting - R-8	per Facility	New	2,283.96	20	\$981.18	15%	25%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-84.08	45	\$1,928.24	45%	50%	\$0.02	0	0	BEST Simulation
Lumber Wood Products	Cooling	RTU - EER 12.0	per Facility	New	24,227.17	23	\$78,364.95	4%	at stock turnover	\$0.40	1	1	BEST Simulation
Lumber Wood Products	Cooling	Strategic Energy Management	per Facility	New	2,527.46	3	\$2,719.75	0%	24%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$295.38	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Cooling	Transformer - High Efficiency	per Facility	New	219.71	32	\$9,484.87	15%	52%	\$0.23	0	0	6th Plan
Lumber Wood Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	21,910.43	23	\$5,594.47	3%	at stock turnover	\$0.03	2	2	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,142.97	10	\$710.32	15%	45%	\$0.02	0	0	DEER
Lumber Wood Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	7,748.70	4	\$483.77	15%	50%	\$0.01	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	2,185.42	15	\$696.18	15%	60%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$2,612.36	15%	75%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	Existing	131.59	15	\$27,191.49	20%	50%	\$0.07	1	1	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	428.99	5	\$76.84	15%	25%	\$0.03	1	1	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	167.59	10	\$179.88	33%	60%	\$0.10	1	2	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,267.45	10	\$1,228.70	15%	30%	\$0.06	6	11	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	344.80	15	\$67.77	100%	at stock turnover	\$0.01	29	30	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	21.58	15	\$13.65	100%	at stock turnover	\$0.02	15	15	AEO 2013
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	26.47	15	\$11.60	100%	at stock turnover	\$0.03	21	41	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	27.01	15	\$5.43	100%	at stock turnover	\$0.04	2	6	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	125.02	3	\$3,077.34	0%	24%	\$0.03	0	1	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	42.92	10	\$3,021.36	15%	24%	\$0.03	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Exterior Lighting	Energy Management System	per Facility	New	113.85	15	\$22,662.76	20%	50%	\$0.07	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	373.86	5	\$76.44	15%	25%	\$0.03	0	0	Illinois TRM
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	153.20	10	\$110.26	44%	60%	\$0.06	0	0	AEG research & analysis
Lumber Wood Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,975.93	10	\$1,222.96	15%	30%	\$0.06	2	2	AEG research & analysis
Lumber Wood Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	344.80	15	\$67.77	100%	at stock turnover	\$0.01	13	14	AEO 2013
Lumber Wood Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	21.58	15	\$13.65	100%	at stock turnover	\$0.04	7	7	AEO 2013
Lumber Wood Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	26.47	15	\$11.60	100%	at stock turnover	\$0.03	9	18	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	27.01	15	\$5.43	100%	at stock turnover	\$0.04	0	1	EIA 2011/Developed from RTF
Lumber Wood Products	Exterior Lighting	Strategic Energy Management	per Facility	New	108.68	3	\$2,719.75	0%	24%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	9.25	32	\$9,484.87	15%	52%	\$0.23	0	0	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	10,566.62	23	\$30,659.92	2%	at stock turnover	\$0.07	1	1	BEST Simulation
Lumber Wood Products	Heating	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$12,493.08	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	Existing	37,067.21	15	\$27,191.49	20%	50%	\$0.07	12	12	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,598.88	23	\$23,472.28	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	Existing	6,535.37	18	\$9,012.57	15%	75%	\$0.04	1	1	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,666.45	18	\$955.57	15%	25%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	149,600.93	45	\$116,414.27	15%	25%	\$0.06	16	16	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,840.49	20	\$1,815.81	15%	25%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	56,763.97	45	\$16,181.55	45%	50%	\$0.03	3	3	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	Existing	32,742.13	3	\$3,077.34	0%	24%	\$0.03	9	9	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$110.06	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	Existing	11,236.03	10	\$3,021.36	15%	24%	\$0.03	1	1	6th Plan
Lumber Wood Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	17,433.11	23	\$26,677.85	2%	at stock turnover	\$0.06	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$8,256.27	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Heating	Energy Management System	per Facility	New	34,858.61	15	\$22,662.76	20%	50%	\$0.07	3	3	BEST Simulation
Lumber Wood Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	12,260.52	23	\$17,589.79	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Heat Pump - Maintenance	per Facility	New	4,236.64	18	\$6,620.84	15%	75%	\$0.04	0	0	AEG research & analysis
Lumber Wood Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-56.31	18	\$342.85	15%	25%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ceiling - R-38	per Facility	New	141,177.16	45	\$93,087.27	15%	25%	\$0.06	5	5	BEST Simulation
Lumber Wood Products	Heating	Insulation - Ducting - R-8	per Facility	New	276.83	20	\$981.18	15%	25%	\$0.04	0	0	BEST Simulation
Lumber Wood Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	7,557.11	45	\$1,928.24	45%	50%	\$0.02	0	0	BEST Simulation
Lumber Wood Products	Heating	Strategic Energy Management	per Facility	New	30,799.12	3	\$2,719.75	0%	24%	\$0.03	2	2	BEST Simulation
Lumber Wood Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$295.38	10%	10%	\$10.00	0	0	BEST Simulation
Lumber Wood Products	Heating	Transformer - High Efficiency	per Facility	New	2,831.96	32	\$9,484.87	15%	52%	\$0.23	0	0	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	Existing	733.02	15	\$27,191.49	20%	50%	\$0.07	4	6	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	642.52	15	\$126.29	100%	at stock turnover	\$0.01	225	229	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,577.10	5	\$520.95	5%	40%	\$0.03	5	10	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,330.53	5	\$694.50	15%	50%	\$0.03	6	13	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,373.21	12	\$4,669.85	3%	25%	\$0.09	15	31	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	762.03	16	\$85.93	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	5,076.80	10	\$1,024.20	7%	60%	\$0.02	34	61	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$12,163.38	15%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,513.84	8	\$403.57	7%	15%	\$0.03	2	4	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	292.51	5	\$21.76	10%	25%	\$0.01	0	1	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	30.81	15	\$19.49	100%	at stock turnover	\$0.03	115	122	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	41.27	15	\$18.08	100%	at stock turnover	\$0.03	23	47	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	42.12	15	\$8.47	100%	at stock turnover	\$0.04	3	7	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	661.78	3	\$3,077.34	0%	24%	\$0.03	3	6	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	227.20	10	\$3,021.36	15%	24%	\$0.03	0	1	6th Plan
Lumber Wood Products	Interior Lighting	Energy Management System	per Facility	New	686.61	15	\$22,662.76	20%	50%	\$0.07	1	2	BEST Simulation
Lumber Wood Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	642.52	15	\$126.29	100%	at stock turnover	\$0.01	99	110	AEO 2013
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,141.79	5	\$520.36	5%	40%	\$0.04	1	2	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,765.57	5	\$693.81	15%	50%	\$0.04	2	3	Illinois TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	4,082.63	12	\$4,389.89	4%	25%	\$0.08	4	7	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	687.95	16	\$85.64	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,582.04	10	\$1,052.87	22%	60%	\$0.02	6	8	Ameren Missouri TRM
Lumber Wood Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$12,163.38	18%	30%	\$10.00	0	0	DEER
Lumber Wood Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,414.60	8	\$392.89	7%	15%	\$0.03	1	1	CA - DEER
Lumber Wood Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	206.24	5	\$21.66	10%	25%	\$0.01	0	0	AEG research & analysis
Lumber Wood Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	30.81	15	\$19.49	100%	at stock turnover	\$0.04	50	55	AEO 2013
Lumber Wood Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	41.27	15	\$18.08	100%	at stock turnover	\$0.03	10	20	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	42.12	15	\$8.47	100%	at stock turnover	\$0.04	0	1	EIA 2011/Developed from RTF
Lumber Wood Products	Interior Lighting	Strategic Energy Management	per Facility	New	616.85	3	\$2,719.75	0%	24%	\$0.03	1	1	BEST Simulation
Lumber Wood Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	53.74	32	\$9,484.87	15%	52%	\$0.23	0	0	6th Plan
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$32.93	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	Existing	2,008.74	3	\$1,925.77	10%	35%	\$0.12	8	8	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,756.76	3	\$3,077.34	0%	24%	\$0.03	7	7	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	603.00	10	\$3,021.36	15%	24%	\$0.03	1	1	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$32.93	0%	0%	\$10.00	0	0	MI - TRM
Lumber Wood Products	Miscellaneous	Commissioning	per Facility	New	2,014.01	3	\$1,925.77	10%	35%	\$0.12	2	2	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Miscellaneous	Strategic Energy Management	per Facility	New	1,756.76	3	\$2,719.75	0%	24%	\$0.03	2	2	BEST Simulation
Lumber Wood Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	163.87	32	\$9,484.87	15%	52%	\$0.23	0	0	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	8,676.95	10	\$579.10	15%	75%	\$0.01	45	45	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	9,701.62	15	\$3,730.30	15%	50%	\$0.04	29	30	OH - TRM
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	2,141.57	15	\$1,625.44	15%	38%	\$0.08	4	4	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	250.65	5	\$99.88	15%	50%	\$0.08	1	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	4,095.29	20	\$6,984.25	15%	50%	\$0.14	11	13	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	2,144.51	15	\$1,637.71	15%	38%	\$0.08	4	4	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	4,544.29	10	\$3,635.17	15%	50%	\$0.10	13	14	VT - TRM
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$494.45	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	Existing	3,583.84	15	\$3,851.94	8%	38%	\$0.11	9	10	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	2,045.91	3	\$410.89	8%	38%	\$0.07	5	5	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	5,869.65	15	\$6,163.18	8%	38%	\$0.11	14	16	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$131.82	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	14,985.98	10	\$3,019.49	8%	38%	\$0.03	38	39	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	Existing	5,094.72	15	\$880.71	8%	38%	\$0.02	13	13	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	Existing	2,584.23	3	\$250.49	8%	38%	\$0.03	6	7	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	7,711.72	10	\$2,254.58	8%	38%	\$0.04	19	20	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	425.64	8	\$1,842.21	10%	50%	\$0.67	5	6	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	302.00	8	\$653.16	5%	25%	\$0.34	2	2	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$207.27	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,987.87	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$7.61	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	7,768.30	17	\$1,661.64	5%	6%	\$0.02	3	3	E3T Website
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	1,185.33	10	\$780.63	15%	36%	\$0.09	8	9	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	7,520.09	17	\$3,990.28	25%	44%	\$0.06	47	49	RSMeans 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$2,663.88	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$1,287.74	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$693.91	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$846.00	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$240.60	8%	38%	\$10.00	0	0	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$2,349.91	8%	38%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	Existing	2,919.77	3	\$1,925.77	10%	35%	\$0.12	23	25	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	Existing	2,691.53	3	\$3,077.34	0%	24%	\$0.03	21	23	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$747.21	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	Existing	923.87	10	\$3,021.36	15%	24%	\$0.03	3	3	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	27,159.27	10	\$2,274.36	15%	75%	\$0.01	140	140	6th Plan
Lumber Wood Products	Motors	Commissioning	per Facility	New	2,562.84	3	\$1,925.77	10%	35%	\$0.12	8	8	Energy Management Program Design for PC
Lumber Wood Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	8,676.95	10	\$579.10	15%	75%	\$0.01	14	14	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	9,620.50	15	\$3,730.30	15%	50%	\$0.04	9	9	OH - TRM
Lumber Wood Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	2,139.39	15	\$1,625.44	15%	38%	\$0.08	1	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	252.02	5	\$99.88	15%	50%	\$0.08	0	0	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	4,120.24	20	\$6,984.25	15%	50%	\$0.14	4	4	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	2,168.25	15	\$1,637.71	15%	38%	\$0.08	1	1	MI - TRM
Lumber Wood Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	4,570.08	10	\$3,635.17	15%	50%	\$0.10	4	4	VT - TRM
Lumber Wood Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$494.45	15%	30%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Compressed Air - System Controls	per Facility	New	3,611.70	15	\$3,851.94	8%	38%	\$0.11	3	3	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Maintenance	per Facility	New	2,055.07	3	\$410.89	8%	38%	\$0.07	2	2	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	5,908.89	15	\$6,163.18	8%	38%	\$0.11	5	5	AEG study for State of New Mexico
Lumber Wood Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$131.82	15%	50%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	14,963.54	10	\$3,019.49	8%	38%	\$0.03	12	12	6th Plan
Lumber Wood Products	Motors	Fan System - Controls	per Facility	New	5,094.72	15	\$880.71	8%	38%	\$0.02	4	4	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Maintenance	per Facility	New	2,549.43	3	\$250.49	8%	38%	\$0.03	2	2	Scaled from Optimization
Lumber Wood Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	7,480.89	10	\$2,254.58	8%	38%	\$0.04	6	6	6th Plan
Lumber Wood Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	372.58	8	\$1,842.21	10%	50%	\$0.75	2	2	Developed from RTF
Lumber Wood Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	264.36	8	\$653.16	5%	25%	\$0.38	1	1	Developed from RTF
Lumber Wood Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$207.27	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,987.87	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$7.61	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	6,829.39	17	\$1,661.64	5%	6%	\$0.03	1	1	E3T Website
Lumber Wood Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	1,038.72	10	\$780.63	15%	36%	\$0.10	3	3	6th Plan
Lumber Wood Products	Motors	Motors - Variable Frequency Drive	per Facility	New	6,743.14	17	\$2,394.21	25%	44%	\$0.04	17	17	RSMeans 2013
Lumber Wood Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$2,663.88	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$1,287.74	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,111.82	10	\$693.91	8%	38%	\$0.05	2	2	6th Plan
Lumber Wood Products	Motors	Pumping System - Controls	per Facility	New	2,141.54	15	\$846.00	8%	38%	\$0.05	2	2	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Maintenance	per Facility	New	1,110.68	3	\$240.60	8%	38%	\$0.08	1	1	Scaled from Optimization
Lumber Wood Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,445.24	12	\$2,349.91	8%	38%	\$0.09	3	3	6th Plan
Lumber Wood Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Motors	Strategic Energy Management	per Facility	New	2,382.78	3	\$2,719.75	0%	24%	\$0.03	7	7	BEST Simulation
Lumber Wood Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$747.21	15%	25%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Motors	Transformer - High Efficiency	per Facility	New	207.82	32	\$9,484.87	15%	52%	\$0.23	1	1	6th Plan
Lumber Wood Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	27,159.27	10	\$2,274.36	15%	75%	\$0.01	43	43	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$215.58	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$20.96	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$98.69	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$117.68	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$3,029.28	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$75.35	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$3,636.56	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$403.77	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$3,695.99	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$71.60	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$11.47	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$67.74	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$2,322.61	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,351.32	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$23.14	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$3,890.60	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$10,152.37	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	Existing	172.62	5	\$15.72	15%	75%	\$0.02	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,707.17	10	\$314.57	15%	75%	\$0.03	9	9	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	Existing	443.97	5	\$983.65	15%	75%	\$0.53	11	11	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	434.19	15	\$196.99	15%	50%	\$0.05	1	1	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	Existing	856.45	18	\$472.69	15%	50%	\$0.06	3	3	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	Existing	300.45	3	\$26.30	15%	50%	\$0.03	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	893.05	15	\$393.88	15%	50%	\$0.05	3	3	AEG study for State of New Mexico
Lumber Wood Products	Process	Retrocommissioning	per Facility	Existing	177.88	3	\$1,925.77	10%	35%	\$0.12	9	2	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	Existing	660.42	3	\$3,077.34	0%	24%	\$0.03	7	7	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	Existing	225.32	10	\$3,021.36	15%	24%	\$0.03	1	1	6th Plan
Lumber Wood Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$215.58	0%	0%	\$10.00	0	0	PA - TRM
Lumber Wood Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$20.96	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$98.69	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$117.68	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Commissioning	per Facility	New	231.20	3	\$1,925.77	10%	35%	\$0.12	2	1	Energy Management Program Design for PC
Lumber Wood Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$3,029.28	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$75.35	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$3,636.56	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$403.77	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$3,695.99	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$71.60	0%	0%	\$10.00	0	0	MT - IRP 2013
Lumber Wood Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$11.47	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Lamps	per Facility	New	0.00	10	\$67.74	0%	0%	\$10.00	0	0	OPA - TRM
Lumber Wood Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$2,322.61	0%	0%	\$10.00	0	0	VT - TRM
Lumber Wood Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,351.32	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$23.14	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$3,890.60	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$10,152.37	0%	0%	\$10.00	0	0	6th Plan
Lumber Wood Products	Process	Process - Conductivity Controls	per Facility	New	172.62	5	\$15.72	15%	75%	\$0.02	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	1,708.81	10	\$314.57	15%	75%	\$0.03	3	3	AEG study for State of New Mexico
Lumber Wood Products	Process	Process - Timers and Controls	per Facility	New	497.70	5	\$983.65	15%	75%	\$0.47	3	3	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	447.95	15	\$196.99	15%	50%	\$0.05	0	0	Developed from RTF
Lumber Wood Products	Process	Refrigeration - System Controls	per Facility	New	861.40	18	\$472.69	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Maintenance	per Facility	New	301.24	3	\$26.30	15%	50%	\$0.03	0	0	AEG study for State of New Mexico
Lumber Wood Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	884.30	15	\$393.88	15%	50%	\$0.05	1	1	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Lumber Wood Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Lumber Wood Products	Process	Strategic Energy Management	per Facility	New	743.21	3	\$2,719.75	0%	24%	\$0.03	2	2	BEST Simulation
Lumber Wood Products	Process	Transformer - High Efficiency	per Facility	New	68.08	32	\$9,484.87	15%	52%	\$0.23	0	0	6th Plan
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$12,493.08	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	Existing	662.02	3	\$3,077.34	0%	24%	\$0.03	1	2	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	227.25	10	\$3,021.36	15%	24%	\$0.03	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	243.23	15	\$20.77	15%	35%	\$0.01	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	7,549.07	20	\$3,265.14	100%	at stock turnover	\$0.05	7	7	BEST Simulation
Lumber Wood Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$8,256.27	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Lumber Wood Products	Ventilation	Strategic Energy Management	per Facility	New	237.66	3	\$2,719.75	0%	24%	\$0.03	0	0	BEST Simulation
Lumber Wood Products	Ventilation	Transformer - High Efficiency	per Facility	New	22.34	32	\$9,484.87	15%	52%	\$0.23	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	87.37	15	\$9.69	15%	35%	\$0.01	0	0	6th Plan
Lumber Wood Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	4,214.95	20	\$2,031.88	100%	at stock turnover	\$0.05	1	1	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	28,382.21	23	\$64,646.61	2%	at stock turnover	\$0.15	15	15	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	16,251.92	23	\$7,970.22	6%	at stock turnover	\$0.05	19	19	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,420.21	10	\$2,320.54	15%	45%	\$0.03	5	6	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,197.95	15	\$1,249.78	15%	60%	\$0.06	2	2	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	409.03	15	\$313.22	15%	75%	\$0.08	0	1	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	13,985.13	15	\$56,431.95	15%	50%	\$0.40	23	26	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	12,357.61	12	\$20,119.34	15%	50%	\$0.19	20	25	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	Existing	3,658.04	15	\$42,829.61	20%	50%	\$0.16	5	6	BEST Simulation
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	27,392.58	23	\$58,230.87	0%	at stock turnover	\$0.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	11,397.23	18	\$14,514.30	15%	75%	\$0.09	5	6	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	814.01	18	\$1,538.97	15%	25%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	Existing	4,970.13	10	\$9,611.79	18%	30%	\$0.09	4	2	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	7,475.82	45	\$187,478.80	15%	25%	\$0.14	4	4	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,334.38	20	\$2,924.23	15%	25%	\$0.07	1	1	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-152.06	45	\$26,059.47	45%	50%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	22,232.40	23	\$66,328.87	4%	at stock turnover	\$0.31	4	4	BEST Simulation
Metal Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,352.64	3	\$765.14	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$59.89	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,137.28	10	\$3,574.19	15%	24%	\$0.05	1	1	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	25,943.00	23	\$12,059.29	3%	at stock turnover	\$0.05	16	15	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,303.30	10	\$1,870.33	15%	45%	\$0.03	2	2	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,912.77	4	\$1,261.76	15%	50%	\$0.03	3	4	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,005.20	15	\$1,767.77	15%	60%	\$0.06	1	1	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	391.10	15	\$310.92	15%	75%	\$0.08	0	0	BEST Simulation
Metal Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	21,489.33	23	\$48,445.23	2%	at stock turnover	\$0.14	6	6	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	9,918.83	23	\$13,010.78	6%	at stock turnover	\$0.14	7	7	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,632.50	10	\$1,812.02	15%	45%	\$0.04	1	1	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,380.03	15	\$873.66	15%	60%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$917.99	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,554.94	15	\$56,431.95	15%	50%	\$0.70	4	4	BEST Simulation
Metal Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	6,670.59	12	\$13,296.22	15%	50%	\$0.22	4	4	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Cooling	Energy Management System	per Facility	New	1,980.12	15	\$35,540.37	20%	50%	\$0.15	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	20,825.74	23	\$43,637.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	7,453.21	18	\$10,662.47	15%	75%	\$0.09	1	1	AEG research & analysis
Metal Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	692.84	18	\$552.13	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Cooling	HVAC - Economizer	per Facility	New	2,571.69	10	\$5,674.39	18%	30%	\$0.09	1	1	DEER
Metal Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	471.35	45	\$149,911.89	15%	25%	\$0.13	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,610.16	20	\$1,580.07	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-58.94	45	\$3,105.26	45%	50%	\$0.05	0	0	BEST Simulation
Metal Mfg	Cooling	RTU - EER 12.0	per Facility	New	13,143.39	23	\$38,741.81	4%	at stock turnover	\$0.31	2	2	BEST Simulation
Metal Mfg	Cooling	Strategic Energy Management	per Facility	New	1,809.40	3	\$645.01	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$160.66	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Cooling	Transformer - High Efficiency	per Facility	New	155.02	32	\$10,796.81	15%	52%	\$0.37	0	0	6th Plan
Metal Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	15,891.40	23	\$9,009.59	3%	at stock turnover	\$0.06	6	6	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,725.20	10	\$1,143.92	15%	45%	\$0.04	0	0	DEER
Metal Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,612.60	4	\$779.13	15%	50%	\$0.03	1	1	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,593.08	15	\$1,121.18	15%	60%	\$0.06	0	0	BEST Simulation
Metal Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$1,421.06	15%	75%	\$10.00	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	95.07	15	\$42,829.61	20%	50%	\$0.16	2	3	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	313.35	5	\$76.82	15%	25%	\$0.04	2	4	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	123.03	10	\$179.88	33%	60%	\$0.14	2	5	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,655.34	10	\$1,228.76	15%	30%	\$0.08	17	33	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	250.08	15	\$67.77	100%	at stock turnover	\$0.01	88	89	AEO 2013
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	15.65	15	\$13.65	100%	at stock turnover	\$0.03	44	45	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	19.20	15	\$11.60	100%	at stock turnover	\$0.04	62	124	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	19.59	15	\$5.43	100%	at stock turnover	\$0.06	7	19	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	90.68	3	\$765.14	0%	5%	\$0.01	0	1	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	31.05	10	\$3,574.19	15%	24%	\$0.05	0	0	6th Plan
Metal Mfg	Exterior Lighting	Energy Management System	per Facility	New	82.98	15	\$35,540.37	20%	50%	\$0.15	1	1	BEST Simulation
Metal Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	272.51	5	\$76.46	15%	25%	\$0.04	1	1	Illinois TRM
Metal Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	111.67	10	\$110.24	44%	60%	\$0.08	0	1	AEG research & analysis
Metal Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,440.26	10	\$1,222.96	15%	30%	\$0.08	5	7	AEG research & analysis
Metal Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	250.08	15	\$67.77	100%	at stock turnover	\$0.01	39	43	AEO 2013
Metal Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	15.65	15	\$13.65	100%	at stock turnover	\$0.05	20	21	AEO 2013
Metal Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	19.20	15	\$11.60	100%	at stock turnover	\$0.04	28	53	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	19.59	15	\$5.43	100%	at stock turnover	\$0.06	1	4	EIA 2011/Developed from RTF
Metal Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	78.83	3	\$645.01	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	6.74	32	\$10,796.81	15%	52%	\$0.37	0	0	6th Plan
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	7,663.86	23	\$49,376.10	2%	at stock turnover	\$0.15	4	4	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$20,119.34	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	Existing	27,064.58	15	\$42,829.61	20%	50%	\$0.16	36	37	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,610.23	23	\$37,800.82	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	4,771.78	18	\$14,514.30	15%	75%	\$0.09	2	2	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,945.69	18	\$1,538.97	15%	25%	\$0.06	1	1	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	109,231.23	45	\$187,478.80	15%	25%	\$0.14	49	49	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,073.99	20	\$2,924.23	15%	25%	\$0.07	1	1	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	41,072.53	45	\$26,059.47	45%	50%	\$0.06	9	9	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	Existing	23,787.29	3	\$765.14	0%	5%	\$0.01	5	5	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$59.89	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	8,219.66	10	\$3,574.19	15%	24%	\$0.05	3	3	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	12,644.05	23	\$42,963.20	2%	at stock turnover	\$0.14	4	4	BEST Simulation
Metal Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$13,296.22	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Heating	Energy Management System	per Facility	New	25,411.85	15	\$35,540.37	20%	50%	\$0.15	11	11	BEST Simulation
Metal Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	8,892.43	23	\$28,327.39	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Metal Mfg	Heating	Heat Pump - Maintenance	per Facility	New	3,088.50	18	\$10,662.47	15%	75%	\$0.09	0	0	AEG research & analysis
Metal Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-41.05	18	\$552.13	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	102,918.19	45	\$149,911.89	15%	25%	\$0.13	14	14	BEST Simulation
Metal Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	201.81	20	\$1,580.07	15%	25%	\$0.08	0	0	BEST Simulation
Metal Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,473.76	45	\$3,105.26	45%	50%	\$0.05	0	0	BEST Simulation
Metal Mfg	Heating	Strategic Energy Management	per Facility	New	22,345.61	3	\$645.01	0%	5%	\$0.01	2	2	BEST Simulation
Metal Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$160.66	10%	10%	\$10.00	0	0	BEST Simulation
Metal Mfg	Heating	Transformer - High Efficiency	per Facility	New	2,064.49	32	\$10,796.81	15%	52%	\$0.37	1	1	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	Existing	514.51	15	\$42,829.61	20%	50%	\$0.16	10	16	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	466.01	15	\$126.29	100%	at stock turnover	\$0.01	676	686	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	1,882.34	5	\$520.93	5%	40%	\$0.04	14	30	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	2,432.60	5	\$694.57	15%	50%	\$0.04	18	39	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	3,210.77	12	\$4,669.84	3%	25%	\$0.13	47	93	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	551.74	16	\$86.00	1%	3%	\$0.01	1	2	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	3,675.81	10	\$1,024.21	7%	60%	\$0.03	101	182	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$8,821.97	15%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,105.76	8	\$403.59	7%	15%	\$0.04	6	12	CA - DEER
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	211.81	5	\$21.80	10%	25%	\$0.01	1	2	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	22.35	15	\$19.49	100%	at stock turnover	\$0.04	344	366	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	29.93	15	\$18.08	100%	at stock turnover	\$0.04	70	140	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	30.55	15	\$8.47	100%	at stock turnover	\$0.06	8	22	EIA 2011/Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	532.46	3	\$765.14	0%	5%	\$0.01	2	4	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	160.62	10	\$3,574.19	15%	24%	\$0.05	1	2	6th Plan
Metal Mfg	Interior Lighting	Energy Management System	per Facility	New	482.02	15	\$35,540.37	20%	50%	\$0.15	3	5	BEST Simulation
Metal Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	466.01	15	\$126.29	100%	at stock turnover	\$0.01	296	330	AEO 2013
Metal Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,495.43	5	\$520.35	5%	40%	\$0.05	4	6	Illinois TRM
Metal Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,081.55	5	\$693.85	15%	50%	\$0.05	6	8	Illinois TRM
Metal Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,002.77	12	\$4,389.90	4%	25%	\$0.12	14	20	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	498.31	16	\$85.64	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,318.95	10	\$1,052.83	22%	60%	\$0.03	17	24	Ameren Missouri TRM
Metal Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$8,821.97	18%	30%	\$10.00	0	0	DEER
Metal Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,031.10	8	\$392.90	7%	15%	\$0.04	2	3	CA - DEER
Metal Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	149.39	5	\$21.66	10%	25%	\$0.02	0	0	AEG research & analysis
Metal Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	22.35	15	\$19.49	100%	at stock turnover	\$0.05	151	166	AEO 2013
Metal Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	29.93	15	\$18.08	100%	at stock turnover	\$0.04	31	60	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	30.55	15	\$8.47	100%	at stock turnover	\$0.06	1	4	EIA 2011/Developed from RTF
Metal Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	480.49	3	\$645.01	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	39.17	32	\$10,796.81	15%	52%	\$0.37	0	0	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$17.93	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,466.69	3	\$1,811.02	5%	39%	\$0.15	35	35	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,274.16	3	\$765.14	0%	5%	\$0.01	4	4	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	440.28	10	\$3,574.19	15%	24%	\$0.05	3	3	6th Plan
Metal Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$17.93	0%	0%	\$10.00	0	0	MI - TRM
Metal Mfg	Miscellaneous	Commissioning	per Facility	New	1,468.22	3	\$1,811.02	5%	39%	\$0.16	10	10	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,274.16	3	\$645.01	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	119.13	32	\$10,796.81	15%	52%	\$0.37	1	1	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	6,293.30	10	\$69.79	15%	75%	\$0.00	134	134	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	7,104.22	15	\$449.78	15%	50%	\$0.01	87	90	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,581.82	15	\$195.95	15%	38%	\$0.01	12	13	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	185.13	5	\$12.05	15%	50%	\$0.01	2	2	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	3,047.07	20	\$842.10	15%	50%	\$0.02	36	40	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,583.97	15	\$197.45	15%	38%	\$0.01	12	13	MI - TRM
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	3,363.68	10	\$438.30	15%	50%	\$0.02	40	43	VT - TRM
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$268.96	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	2,652.39	15	\$464.41	8%	38%	\$0.02	27	30	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,511.19	3	\$49.56	8%	38%	\$0.01	16	17	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	4,344.42	15	\$743.13	8%	38%	\$0.02	44	48	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$71.72	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	10,948.86	10	\$1,326.95	8%	38%	\$0.02	116	117	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	Existing	3,688.68	15	\$387.02	8%	38%	\$0.01	39	39	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,888.03	3	\$110.10	8%	38%	\$0.02	19	20	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	5,634.13	10	\$990.79	8%	38%	\$0.03	58	60	6th Plan
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	319.57	8	\$909.52	10%	50%	\$0.46	17	19	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	226.74	8	\$322.47	5%	25%	\$0.23	6	7	Developed from RTF

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$112.75	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$960.95	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$3.66	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	5,713.47	17	\$820.37	5%	6%	\$0.02	8	8	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	877.60	10	\$385.44	15%	36%	\$0.06	25	27	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	5,546.43	17	\$1,970.03	25%	44%	\$0.04	146	150	RSMeans 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,287.79	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$622.49	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$442.60	8%	38%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$539.57	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$153.49	8%	38%	\$10.00	0	0	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$1,498.88	8%	38%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Retrocommissioning	per Facility	Existing	2,188.01	3	\$1,811.02	5%	39%	\$0.15	102	106	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,998.14	3	\$765.14	0%	5%	\$0.01	14	14	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$361.20	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	658.61	10	\$3,574.19	15%	24%	\$0.05	8	9	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$1,317.77	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Commissioning	per Facility	New	1,933.28	3	\$1,811.02	5%	39%	\$0.16	36	36	Energy Management Program Design for PC
Metal Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	6,293.30	10	\$69.79	15%	75%	\$0.00	41	41	MI - TRM
Metal Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	7,132.26	15	\$449.78	15%	50%	\$0.01	27	27	OH - TRM
Metal Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,593.20	15	\$195.95	15%	38%	\$0.01	4	4	MI - TRM
Metal Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	186.58	5	\$12.05	15%	50%	\$0.01	1	1	MI - TRM
Metal Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	3,079.09	20	\$842.10	15%	50%	\$0.02	12	12	MI - TRM
Metal Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,595.87	15	\$197.45	15%	38%	\$0.01	4	4	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	3,392.05	10	\$438.30	15%	50%	\$0.02	13	13	VT - TRM
Metal Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$268.96	15%	30%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Compressed Air - System Controls	per Facility	New	2,741.02	15	\$464.41	8%	38%	\$0.02	9	9	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	1,521.45	3	\$49.56	8%	38%	\$0.01	5	5	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	4,325.16	15	\$743.13	8%	38%	\$0.02	14	14	AEG study for State of New Mexico
Metal Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$71.72	15%	50%	\$10.00	0	0	VT - TRM
Metal Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	10,916.81	10	\$1,326.95	8%	38%	\$0.02	36	36	6th Plan
Metal Mfg	Motors	Fan System - Controls	per Facility	New	3,690.20	15	\$387.02	8%	38%	\$0.01	12	12	Scaled from Optimization
Metal Mfg	Motors	Fan System - Maintenance	per Facility	New	1,858.51	3	\$110.10	8%	38%	\$0.02	6	6	Scaled from Optimization
Metal Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	5,453.45	10	\$990.79	8%	38%	\$0.03	18	18	6th Plan
Metal Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	281.24	8	\$909.52	10%	50%	\$0.51	6	6	Developed from RTF
Metal Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	199.74	8	\$322.47	5%	25%	\$0.26	2	2	Developed from RTF
Metal Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$112.75	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$960.95	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$3.66	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	5,002.19	17	\$820.37	5%	6%	\$0.02	3	3	E3T Website
Metal Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	777.17	10	\$385.44	15%	36%	\$0.07	9	9	6th Plan
Metal Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,973.28	17	\$1,182.00	25%	44%	\$0.03	51	51	RSMeans 2013
Metal Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,287.79	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$622.49	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	1,539.51	10	\$442.60	8%	38%	\$0.04	5	5	6th Plan
Metal Mfg	Motors	Pumping System - Controls	per Facility	New	1,561.18	15	\$539.57	8%	38%	\$0.04	5	5	Scaled from Optimization
Metal Mfg	Motors	Pumping System - Maintenance	per Facility	New	809.68	3	\$153.49	8%	38%	\$0.07	3	3	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	2,505.05	12	\$1,498.88	8%	38%	\$0.08	8	8	6th Plan
Metal Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Motors	Strategic Energy Management	per Facility	New	1,784.07	3	\$645.01	0%	5%	\$0.01	5	5	BEST Simulation
Metal Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$361.20	15%	25%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Motors	Transformer - High Efficiency	per Facility	New	156.77	32	\$10,796.81	15%	52%	\$0.37	3	3	6th Plan
Metal Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$1,317.77	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$137.57	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$67.42	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$317.30	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$378.48	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$1,647.84	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$242.50	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$11,696.36	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,298.70	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$11,887.36	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$117.98	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$6.24	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$36.87	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$1,263.41	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,679.66	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$45.83	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	12,598.23	10	\$6,409.06	15%	75%	\$0.08	269	269	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$20,131.10	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	Existing	123.96	5	\$89.87	15%	75%	\$0.18	3	3	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,236.27	10	\$1,797.67	15%	75%	\$0.21	26	26	AEG study for State of New Mexico
Metal Mfg	Process	Process - Timers and Controls	per Facility	Existing	303.35	5	\$1,950.52	15%	75%	\$1.44	30	32	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	326.03	15	\$386.73	15%	50%	\$0.14	4	4	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	Existing	625.33	18	\$928.10	15%	50%	\$0.15	8	8	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	219.38	3	\$51.57	15%	50%	\$0.09	3	3	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	643.05	15	\$773.39	15%	50%	\$0.14	8	8	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	Existing	123.87	3	\$1,811.02	5%	39%	\$0.15	35	7	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	Existing	479.28	3	\$765.14	0%	5%	\$0.01	4	4	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	Existing	165.62	10	\$3,574.19	15%	24%	\$0.05	3	3	6th Plan
Metal Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$137.57	0%	0%	\$10.00	0	0	PA - TRM
Metal Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$67.42	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$317.30	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$378.48	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Commissioning	per Facility	New	155.53	3	\$1,811.02	5%	39%	\$0.16	9	4	Energy Management Program Design for PC
Metal Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$1,647.84	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$242.50	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$11,696.36	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,298.70	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$11,887.36	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$117.98	0%	0%	\$10.00	0	0	MT - IRP 2013
Metal Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$6.24	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$36.87	0%	0%	\$10.00	0	0	OPA - TRM
Metal Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$1,263.41	0%	0%	\$10.00	0	0	VT - TRM
Metal Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,679.66	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$45.83	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Metal: New Arc Furnace	per Facility	New	12,611.33	10	\$6,409.06	15%	75%	\$0.08	82	82	6th Plan
Metal Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$20,131.10	0%	0%	\$10.00	0	0	6th Plan
Metal Mfg	Process	Process - Conductivity Controls	per Facility	New	123.72	5	\$89.87	15%	75%	\$0.18	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	1,232.65	10	\$1,797.67	15%	75%	\$0.21	8	8	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Metal Mfg	Process	Process - Timers and Controls	per Facility	New	327.08	5	\$1,950.52	15%	75%	\$1.28	8	8	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	318.09	15	\$386.73	15%	50%	\$0.14	1	1	Developed from RTF
Metal Mfg	Process	Refrigeration - System Controls	per Facility	New	627.95	18	\$928.10	15%	50%	\$0.15	2	2	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Maintenance	per Facility	New	219.60	3	\$51.57	15%	50%	\$0.09	1	1	AEG study for State of New Mexico
Metal Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	653.12	15	\$773.39	15%	50%	\$0.14	2	2	AEG study for State of New Mexico
Metal Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Metal Mfg	Process	Strategic Energy Management	per Facility	New	539.55	3	\$645.01	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Process	Transformer - High Efficiency	per Facility	New	44.74	32	\$10,796.81	15%	52%	\$0.37	1	1	6th Plan
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$20,119.34	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	480.80	3	\$765.14	0%	5%	\$0.01	1	1	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	165.92	10	\$3,574.19	15%	24%	\$0.05	0	1	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	176.11	15	\$33.49	15%	35%	\$0.02	1	1	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,475.26	20	\$5,258.33	100%	at stock turnover	\$0.10	22	22	BEST Simulation
Metal Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$13,296.22	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Metal Mfg	Ventilation	Strategic Energy Management	per Facility	New	172.71	3	\$645.01	0%	5%	\$0.01	0	0	BEST Simulation
Metal Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	16.29	32	\$10,796.81	15%	52%	\$0.37	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	63.29	15	\$15.56	15%	35%	\$0.03	0	0	6th Plan
Metal Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,057.06	20	\$3,272.24	100%	at stock turnover	\$0.11	3	3	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	17,581.20	23	\$45,189.66	2%	at stock turnover	\$0.17	677	655	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	10,067.16	23	\$5,571.39	6%	at stock turnover	\$0.06	857	861	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	5,841.91	10	\$1,622.12	15%	45%	\$0.04	238	265	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,322.44	15	\$873.62	15%	60%	\$0.07	78	92	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	246.12	15	\$218.94	15%	75%	\$0.09	19	23	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	9,397.66	15	\$5,876.49	15%	50%	\$0.07	1,159	1,285	BEST Simulation
Mining and Extraction	Cooling	De-stratification Fans (HVLS)	per Facility	Existing	7,439.26	12	\$14,063.95	15%	50%	\$0.22	871	1,105	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	Existing	2,201.99	15	\$30,412.71	20%	50%	\$0.17	222	258	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	16,968.18	23	\$40,704.89	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	Existing	6,860.54	18	\$10,145.86	15%	75%	\$0.10	211	268	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	505.11	18	\$1,075.75	15%	25%	\$0.07	18	21	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	Existing	2,991.17	10	\$6,718.87	18%	30%	\$0.10	183	75	DEER
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	4,499.94	45	\$131,052.55	15%	25%	\$0.16	152	176	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	Existing	1,404.91	20	\$2,044.13	15%	25%	\$0.07	48	55	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-94.36	45	\$18,216.25	45%	50%	\$0.06	-2	-2	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	Existing	13,771.74	23	\$46,365.60	4%	at stock turnover	\$0.35	201	201	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$12.47	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	Existing	718.88	10	\$1,390.36	15%	24%	\$0.02	24	26	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	16,070.25	23	\$8,429.76	3%	at stock turnover	\$0.05	701	698	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	4,529.15	10	\$1,307.42	15%	45%	\$0.04	88	108	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	6,767.56	4	\$881.99	15%	50%	\$0.03	154	186	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,809.42	15	\$1,235.69	15%	60%	\$0.07	51	66	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	235.50	15	\$217.32	15%	75%	\$0.09	9	11	BEST Simulation
Mining and Extraction	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	13,311.45	23	\$33,864.47	2%	at stock turnover	\$0.15	293	280	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	6,144.17	23	\$23.48	6%	at stock turnover	\$0.00	321	326	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,113.94	10	\$1,266.66	15%	45%	\$0.04	53	55	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	855.99	15	\$610.71	15%	60%	\$0.07	16	17	BEST Simulation
Mining and Extraction	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$191.19	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	4,916.41	15	\$5,876.49	15%	50%	\$0.12	195	204	BEST Simulation
Mining and Extraction	Cooling	Destratification Fans (HVLS)	per Facility	New	3,956.59	12	\$9,294.38	15%	50%	\$0.25	156	164	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Cooling	Energy Management System	per Facility	New	1,174.46	15	\$25,315.34	20%	50%	\$0.16	40	42	BEST Simulation
Mining and Extraction	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	12,900.39	23	\$30,503.65	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Heat Pump - Maintenance	per Facility	New	4,622.98	18	\$7,453.36	15%	75%	\$0.11	46	51	AEG research & analysis
Mining and Extraction	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	429.75	18	\$385.95	15%	25%	\$0.09	5	5	BEST Simulation
Mining and Extraction	Cooling	HVAC - Economizer	per Facility	New	1,595.14	10	\$3,966.56	18%	30%	\$0.11	46	26	DEER
Mining and Extraction	Cooling	Insulation - Ceiling - R-38	per Facility	New	279.57	45	\$104,792.32	15%	25%	\$0.14	3	3	BEST Simulation
Mining and Extraction	Cooling	Insulation - Ducting - R-8	per Facility	New	998.73	20	\$1,104.52	15%	25%	\$0.09	11	12	BEST Simulation
Mining and Extraction	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-36.56	45	\$2,170.66	45%	50%	\$0.06	0	0	BEST Simulation
Mining and Extraction	Cooling	RTU - EER 12.0	per Facility	New	8,141.60	23	\$27,081.53	4%	at stock turnover	\$0.35	76	77	BEST Simulation
Mining and Extraction	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$33.46	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Cooling	Transformer - High Efficiency	per Facility	New	96.47	32	\$4,449.27	15%	52%	\$0.14	4	4	6th Plan
Mining and Extraction	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	9,843.84	23	\$6,297.94	3%	at stock turnover	\$0.07	262	262	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	2,310.62	10	\$799.63	15%	45%	\$0.04	14	15	DEER
Mining and Extraction	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	3,481.31	4	\$544.64	15%	50%	\$0.04	25	27	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	988.13	15	\$783.74	15%	60%	\$0.07	9	10	BEST Simulation
Mining and Extraction	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$295.96	15%	75%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	Existing	124.79	15	\$30,412.71	20%	50%	\$0.17	177	291	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	411.07	5	\$76.79	15%	25%	\$0.03	202	397	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.49	10	\$179.91	33%	60%	\$0.11	210	438	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,172.76	10	\$1,228.74	15%	30%	\$0.06	1,598	3,157	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	8,422	8,540	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	4,241	4,301	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	5,965	11,893	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	658	1,855	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	41.13	10	\$1,390.36	15%	24%	\$0.02	19	30	6th Plan
Mining and Extraction	Exterior Lighting	Energy Management System	per Facility	New	108.78	15	\$25,315.34	20%	50%	\$0.16	52	77	BEST Simulation
Mining and Extraction	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.54	5	\$76.44	15%	25%	\$0.03	57	84	Illinois TRM
Mining and Extraction	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.51	10	\$110.23	44%	60%	\$0.06	37	56	AEG research & analysis
Mining and Extraction	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,889.69	10	\$1,222.92	15%	30%	\$0.06	451	669	AEG research & analysis
Mining and Extraction	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	3,688	4,106	AEO 2013
Mining and Extraction	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	1,868	2,053	AEO 2013
Mining and Extraction	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	2,645	5,067	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	116	335	EIA 2011/Developed from RTF
Mining and Extraction	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.93	32	\$4,449.27	15%	52%	\$0.14	5	8	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	4,747.33	23	\$34,515.18	2%	at stock turnover	\$0.17	180	172	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$14,063.95	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Heating	Energy Management System	per Facility	Existing	16,794.36	15	\$30,412.71	20%	50%	\$0.17	1,642	1,664	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	1,616.89	23	\$26,423.75	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	Existing	2,961.03	18	\$10,145.86	15%	75%	\$0.10	105	108	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,207.36	18	\$1,075.75	15%	25%	\$0.07	40	40	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	Existing	67,781.23	45	\$131,052.55	15%	25%	\$0.16	2,227	2,239	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,286.97	20	\$2,044.13	15%	25%	\$0.07	42	43	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	25,486.73	45	\$18,216.25	45%	50%	\$0.06	419	421	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$12.47	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	Existing	5,100.54	10	\$1,390.36	15%	24%	\$0.02	157	158	6th Plan
Mining and Extraction	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	7,832.29	23	\$30,032.39	2%	at stock turnover	\$0.15	171	162	BEST Simulation
Mining and Extraction	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$9,294.38	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Heating	Energy Management System	per Facility	New	15,747.48	15	\$25,315.34	20%	50%	\$0.16	476	477	BEST Simulation
Mining and Extraction	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	5,508.37	23	\$19,801.58	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Mining and Extraction	Heating	Heat Pump - Maintenance	per Facility	New	1,915.71	18	\$7,453.36	15%	75%	\$0.11	21	21	AEG research & analysis
Mining and Extraction	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-25.46	18	\$385.95	15%	25%	\$0.09	0	0	BEST Simulation
Mining and Extraction	Heating	Insulation - Ceiling - R-38	per Facility	New	63,777.43	45	\$104,792.32	15%	25%	\$0.14	643	644	BEST Simulation
Mining and Extraction	Heating	Insulation - Ducting - R-8	per Facility	New	125.18	20	\$1,104.52	15%	25%	\$0.09	1	1	BEST Simulation
Mining and Extraction	Heating	Insulation - Wall Cavity - R-23	per Facility	New	3,395.23	45	\$2,170.66	45%	50%	\$0.06	17	17	BEST Simulation
Mining and Extraction	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$33.46	10%	10%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Heating	Transformer - High Efficiency	per Facility	New	1,308.67	32	\$4,449.27	15%	52%	\$0.14	49	49	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	Existing	675.33	15	\$30,412.71	20%	50%	\$0.17	983	1,576	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	64,625	65,537	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,469.40	5	\$520.90	5%	40%	\$0.03	1,365	2,844	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,191.29	5	\$694.54	15%	50%	\$0.03	1,739	3,706	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,214.37	12	\$4,669.81	3%	25%	\$0.10	4,523	8,912	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	724.21	16	\$85.98	1%	3%	\$0.01	76	145	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,822.19	10	\$1,024.18	7%	60%	\$0.02	9,690	17,415	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$918.67	15%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,450.61	8	\$403.59	7%	15%	\$0.03	613	1,184	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	278.00	5	\$21.78	10%	25%	\$0.01	51	152	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	32,852	34,973	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	6,709	13,378	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	740	2,087	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	241.24	10	\$1,390.36	15%	24%	\$0.02	118	176	6th Plan
Mining and Extraction	Interior Lighting	Energy Management System	per Facility	New	631.84	15	\$25,315.34	20%	50%	\$0.16	305	444	BEST Simulation
Mining and Extraction	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	28,298	31,512	AEO 2013
Mining and Extraction	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,048.32	5	\$520.38	5%	40%	\$0.04	397	563	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,644.83	5	\$693.85	15%	50%	\$0.04	511	725	Illinois TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,939.74	12	\$4,389.87	4%	25%	\$0.09	1,306	1,897	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	653.81	16	\$85.63	1%	3%	\$0.01	21	31	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,354.64	10	\$1,052.84	22%	60%	\$0.02	1,600	2,322	Ameren Missouri TRM
Mining and Extraction	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$918.67	18%	30%	\$10.00	0	0	DEER
Mining and Extraction	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,352.85	8	\$392.88	7%	15%	\$0.03	181	263	CA - DEER
Mining and Extraction	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	196.00	5	\$21.64	10%	25%	\$0.01	14	23	AEG research & analysis
Mining and Extraction	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	14,466	15,895	AEO 2013
Mining and Extraction	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	2,975	5,700	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	130	377	EIA 2011/Developed from RTF
Mining and Extraction	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.86	32	\$4,449.27	15%	52%	\$0.14	31	45	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	Existing	847.08	3	\$3,997.35	10%	40%	\$0.08	847	847	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	254.28	10	\$1,390.36	15%	24%	\$0.02	120	120	6th Plan
Mining and Extraction	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	MI - TRM
Mining and Extraction	Miscellaneous	Commissioning	per Facility	New	847.62	3	\$3,997.35	10%	40%	\$0.08	240	240	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Miscellaneous	Transformer - High Efficiency	per Facility	New	68.86	32	\$4,449.27	15%	52%	\$0.14	37	37	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	36,235.56	10	\$1,103.06	15%	75%	\$0.00	37,215	37,215	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	40,879.33	15	\$7,105.99	15%	50%	\$0.02	24,029	24,946	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	9,032.12	15	\$3,096.32	15%	38%	\$0.04	3,349	3,606	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,063.66	5	\$190.24	15%	50%	\$0.04	612	662	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	17,338.43	20	\$13,304.45	15%	50%	\$0.07	9,690	11,035	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	9,156.93	15	\$3,119.69	15%	38%	\$0.04	3,402	3,649	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	19,136.96	10	\$6,924.61	15%	50%	\$0.05	10,904	11,970	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$56.02	15%	30%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	Existing	15,448.80	15	\$7,337.70	8%	38%	\$0.05	7,494	8,334	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	Existing	8,706.21	3	\$782.69	8%	38%	\$0.03	6,556	6,988	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	24,361.29	15	\$11,740.32	8%	38%	\$0.05	11,761	13,198	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$14.94	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	35,849.29	10	\$4,658.86	8%	38%	\$0.02	18,230	18,409	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	Existing	12,078.52	15	\$1,358.83	8%	38%	\$0.01	6,203	6,203	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	Existing	6,178.45	3	\$386.51	8%	38%	\$0.02	4,624	4,807	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	18,437.37	10	\$3,478.62	8%	38%	\$0.03	9,062	9,468	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,208.11	8	\$3,414.67	10%	50%	\$0.25	10,938	11,663	Developed from RTF
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,566.68	8	\$1,210.63	5%	25%	\$0.13	3,881	4,137	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$19,231.16	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$73.36	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	39,485.36	17	\$7,700.05	5%	6%	\$0.02	5,077	5,120	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	6,248.19	10	\$1,447.02	15%	36%	\$0.03	16,713	17,212	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	Existing	38,871.57	17	\$16,544.62	25%	44%	\$0.05	62,003	63,211	RSMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$25,771.15	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$12,458.13	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	42,995.23	10	\$8,153.00	8%	38%	\$0.03	21,853	22,079	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	Existing	43,431.15	15	\$9,940.14	8%	38%	\$0.03	22,279	22,303	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	Existing	22,400.53	3	\$2,827.41	8%	38%	\$0.05	16,911	17,429	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	69,630.62	12	\$27,611.49	8%	38%	\$0.05	34,523	35,757	6th Plan
Mining and Extraction	Motors	Retrocommissioning	per Facility	Existing	15,105.11	3	\$3,997.35	10%	40%	\$0.08	37,278	38,784	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,028.40	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	Existing	4,783.59	10	\$1,390.36	15%	24%	\$0.02	5,795	5,815	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$711.06	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Commissioning	per Facility	New	14,946.21	3	\$3,997.35	10%	40%	\$0.08	11,685	11,685	Energy Management Program Design for PC
Mining and Extraction	Motors	Compressed Air - Air Usage Reduction	per Facility	New	36,235.56	10	\$1,103.06	15%	75%	\$0.00	11,378	11,378	MI - TRM
Mining and Extraction	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	41,066.12	15	\$7,105.99	15%	50%	\$0.02	7,499	7,499	OH - TRM
Mining and Extraction	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	9,021.35	15	\$3,096.32	15%	38%	\$0.04	1,055	1,055	MI - TRM
Mining and Extraction	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,056.49	5	\$190.24	15%	50%	\$0.04	192	192	MI - TRM
Mining and Extraction	Motors	Compressed Air - Outside Air Intake	per Facility	New	17,449.60	20	\$13,304.45	15%	50%	\$0.07	3,161	3,161	MI - TRM
Mining and Extraction	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	9,036.50	15	\$3,119.69	15%	38%	\$0.04	1,056	1,056	MI - TRM
Mining and Extraction	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	19,207.43	10	\$6,924.61	15%	50%	\$0.05	3,491	3,491	VT - TRM
Mining and Extraction	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$56.02	15%	30%	\$10.00	0	0	VT - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Compressed Air - System Controls	per Facility	New	15,179.21	15	\$7,337.70	8%	38%	\$0.05	2,359	2,359	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Maintenance	per Facility	New	8,637.26	3	\$782.69	8%	38%	\$0.03	2,042	2,042	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	24,834.04	15	\$11,740.32	8%	38%	\$0.05	3,865	3,865	AEG study for State of New Mexico
Mining and Extraction	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$14.94	15%	50%	\$10.00	0	0	VT - TRM
Mining and Extraction	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	35,732.11	10	\$4,658.86	8%	38%	\$0.02	5,606	5,606	6th Plan
Mining and Extraction	Motors	Fan System - Controls	per Facility	New	12,078.52	15	\$1,358.83	8%	38%	\$0.01	1,896	1,896	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Maintenance	per Facility	New	6,083.11	3	\$386.51	8%	38%	\$0.02	1,443	1,443	Scaled from Optimization
Mining and Extraction	Motors	Fan System - Optimization - Optimized System	per Facility	New	18,114.51	10	\$3,478.62	8%	38%	\$0.03	2,834	2,834	6th Plan
Mining and Extraction	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	2,176.98	8	\$3,414.67	10%	50%	\$0.25	3,436	3,436	Developed from RTF
Mining and Extraction	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,546.08	8	\$1,210.63	5%	25%	\$0.13	1,220	1,220	Developed from RTF
Mining and Extraction	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$19,231.16	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$73.36	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	39,483.58	17	\$7,700.05	5%	6%	\$0.02	1,564	1,564	E3T Website
Mining and Extraction	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	6,133.13	10	\$1,447.02	15%	36%	\$0.03	5,093	5,093	6th Plan
Mining and Extraction	Motors	Motors - Variable Frequency Drive	per Facility	New	39,140.23	17	\$9,926.78	25%	44%	\$0.03	19,430	19,430	RSMeans 2013
Mining and Extraction	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$25,771.15	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$12,458.13	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	42,217.58	10	\$8,153.00	8%	38%	\$0.03	6,618	6,618	6th Plan
Mining and Extraction	Motors	Pumping System - Controls	per Facility	New	43,449.11	15	\$9,940.14	8%	38%	\$0.03	6,821	6,821	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Maintenance	per Facility	New	22,146.24	3	\$2,827.41	8%	38%	\$0.05	5,255	5,255	Scaled from Optimization
Mining and Extraction	Motors	Pumping System - Optimization - Optimized System	per Facility	New	68,695.43	12	\$27,611.49	8%	38%	\$0.05	10,754	10,754	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,028.40	15%	25%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Motors	Transformer - High Efficiency	per Facility	New	1,213.50	32	\$4,449.27	15%	52%	\$0.14	1,780	1,780	6th Plan
Mining and Extraction	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$711.06	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$43.98	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$207.07	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$247.01	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$158.26	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$7,633.93	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$847.62	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$7,758.59	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Lamps	per Facility	Existing	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	Existing	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,792.11	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$30.66	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$704.33	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$13,463.52	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	Existing	931.79	5	\$251.74	15%	75%	\$0.07	956	957	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	9,230.83	10	\$5,034.83	15%	75%	\$0.08	9,394	9,480	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	Existing	933.99	5	\$1,304.48	15%	75%	\$0.33	4,672	4,796	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,007.13	15	\$480.60	15%	50%	\$0.06	601	605	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	Existing	1,931.68	18	\$1,153.44	15%	50%	\$0.06	1,139	1,175	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	Existing	677.67	3	\$64.08	15%	50%	\$0.04	615	615	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,986.43	15	\$961.20	15%	50%	\$0.06	1,181	1,199	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	Existing	384.01	3	\$3,997.35	10%	40%	\$0.08	4,903	986	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	Existing	483.14	10	\$1,390.36	15%	24%	\$0.02	587	587	6th Plan
Mining and Extraction	Process	Automatic Milker Takeoffs	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	PA - TRM
Mining and Extraction	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$43.98	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$207.07	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$247.01	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Commissioning	per Facility	New	384.36	3	\$3,997.35	10%	40%	\$0.08	1,507	672	Energy Management Program Design for PC
Mining and Extraction	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$158.26	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$7,633.93	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$847.62	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$7,758.59	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	MT - IRP 2013
Mining and Extraction	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Process	Heat Lamps	per Facility	New	0.00	10	\$0.00	0%	0%	\$10.00	0	0	OPA - TRM
Mining and Extraction	Process	Heat Reclaimers	per Facility	New	0.00	15	\$0.00	0%	0%	\$10.00	0	0	VT - TRM
Mining and Extraction	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,792.11	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$30.66	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$704.33	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$13,463.52	0%	0%	\$10.00	0	0	6th Plan
Mining and Extraction	Process	Process - Conductivity Controls	per Facility	New	932.38	5	\$251.74	15%	75%	\$0.07	293	293	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	9,203.20	10	\$5,034.83	15%	75%	\$0.08	2,888	2,888	AEG study for State of New Mexico
Mining and Extraction	Process	Process - Timers and Controls	per Facility	New	924.95	5	\$1,304.48	15%	75%	\$0.33	1,449	1,449	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,008.35	15	\$480.60	15%	50%	\$0.06	185	185	Developed from RTF
Mining and Extraction	Process	Refrigeration - System Controls	per Facility	New	1,938.98	18	\$1,153.44	15%	50%	\$0.06	354	354	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Maintenance	per Facility	New	678.09	3	\$64.08	15%	50%	\$0.04	188	188	AEG study for State of New Mexico
Mining and Extraction	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,990.55	15	\$961.20	15%	50%	\$0.06	364	364	AEG study for State of New Mexico
Mining and Extraction	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Mining and Extraction	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Process	Transformer - High Efficiency	per Facility	New	126.53	32	\$4,449.27	15%	52%	\$0.14	186	186	6th Plan
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$14,063.95	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	Existing	103.09	10	\$1,390.36	15%	24%	\$0.02	21	25	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	109.21	15	\$23.40	15%	35%	\$0.02	47	57	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	3,391.62	20	\$3,675.71	100%	at stock turnover	\$0.11	1,010	1,012	BEST Simulation
Mining and Extraction	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$9,294.38	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Mining and Extraction	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Mining and Extraction	Ventilation	Transformer - High Efficiency	per Facility	New	10.10	32	\$4,449.27	15%	52%	\$0.14	3	3	6th Plan
Mining and Extraction	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	39.25	15	\$10.86	15%	35%	\$0.03	6	6	6th Plan
Mining and Extraction	Ventilation	Ventilation - Variable Air Volume	per Facility	New	1,893.68	20	\$2,287.38	100%	at stock turnover	\$0.13	156	157	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	25,747.69	23	\$88,816.51	2%	at stock turnover	\$0.22	25	24	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	14,743.37	23	\$10,950.11	6%	at stock turnover	\$0.08	32	32	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,545.80	10	\$3,188.16	15%	45%	\$0.05	9	10	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,993.93	15	\$1,717.02	15%	60%	\$0.09	3	3	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	371.07	15	\$430.35	15%	75%	\$0.13	1	1	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	12,686.99	15	\$51,193.77	15%	50%	\$0.40	38	44	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	11,210.54	12	\$27,641.51	15%	50%	\$0.29	34	41	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	Existing	3,318.49	15	\$58,254.19	20%	50%	\$0.24	9	10	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	24,849.92	23	\$80,002.06	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	10,339.31	18	\$19,940.84	15%	75%	\$0.14	8	10	AEG research & analysis
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	738.45	18	\$2,114.31	15%	25%	\$0.09	1	1	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	Existing	4,508.79	10	\$13,205.36	18%	30%	\$0.13	7	3	DEER
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	6,781.89	45	\$257,572.84	15%	25%	\$0.21	6	7	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,117.70	20	\$4,017.55	15%	25%	\$0.10	2	2	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-137.95	45	\$35,802.52	45%	50%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	20,168.72	23	\$91,127.72	4%	at stock turnover	\$0.47	7	7	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,041.44	3	\$862.84	0%	5%	\$0.01	1	2	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$108.66	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,031.71	10	\$4,000.44	15%	24%	\$0.06	1	1	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	23,534.90	23	\$16,567.99	3%	at stock turnover	\$0.07	26	26	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	6,625.38	10	\$2,569.64	15%	45%	\$0.05	3	4	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	9,899.81	4	\$1,733.48	15%	50%	\$0.05	6	7	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,726.25	15	\$2,428.65	15%	60%	\$0.09	2	2	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	354.80	15	\$427.09	15%	75%	\$0.12	0	0	BEST Simulation
Misc. Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	19,494.63	23	\$66,557.79	2%	at stock turnover	\$0.21	11	10	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	8,998.14	23	\$4,249.11	6%	at stock turnover	\$0.05	12	12	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,016.85	10	\$2,489.48	15%	45%	\$0.05	2	2	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,251.93	15	\$1,200.33	15%	60%	\$0.10	1	1	BEST Simulation
Misc. Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$1,665.55	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	6,853.67	15	\$51,193.77	15%	50%	\$0.70	7	7	BEST Simulation
Misc. Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	6,051.40	12	\$18,267.35	15%	50%	\$0.33	6	6	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Cooling	Energy Management System	per Facility	New	1,796.32	15	\$48,242.06	20%	50%	\$0.22	2	2	BEST Simulation
Misc. Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	18,892.63	23	\$59,952.37	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	6,761.38	18	\$14,648.91	15%	75%	\$0.14	2	2	AEG research & analysis
Misc. Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	628.53	18	\$758.54	15%	25%	\$0.12	0	0	BEST Simulation
Misc. Mfg	Cooling	HVAC - Economizer	per Facility	New	2,332.97	10	\$7,795.92	18%	30%	\$0.14	2	1	DEER
Misc. Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	427.60	45	\$205,960.57	15%	25%	\$0.19	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,460.70	20	\$2,170.86	15%	25%	\$0.12	0	0	BEST Simulation
Misc. Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-53.47	45	\$4,266.23	45%	50%	\$0.08	0	0	BEST Simulation
Misc. Mfg	Cooling	RTU - EER 12.0	per Facility	New	11,923.39	23	\$53,226.49	4%	at stock turnover	\$0.46	3	3	BEST Simulation
Misc. Mfg	Cooling	Strategic Energy Management	per Facility	New	1,641.44	3	\$697.64	0%	5%	\$0.01	0	0	BEST Simulation
Misc. Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$291.49	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Cooling	Transformer - High Efficiency	per Facility	New	140.63	32	\$11,677.94	15%	52%	\$0.44	0	0	6th Plan
Misc. Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	14,416.32	23	\$12,378.07	3%	at stock turnover	\$0.09	10	10	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,379.42	10	\$1,571.60	15%	45%	\$0.05	1	1	DEER
Misc. Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,091.62	4	\$1,070.46	15%	50%	\$0.05	1	1	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,445.20	15	\$1,540.37	15%	60%	\$0.10	0	0	BEST Simulation
Misc. Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$2,578.30	15%	75%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	86.25	15	\$58,254.19	20%	50%	\$0.24	3	5	BEST Simulation
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	284.26	5	\$76.78	15%	25%	\$0.05	4	7	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	111.61	10	\$179.91	33%	60%	\$0.16	4	8	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	1,501.68	10	\$1,228.77	15%	30%	\$0.08	28	55	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	226.87	15	\$67.77	100%	at stock turnover	\$0.01	147	149	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	14.20	15	\$13.65	100%	at stock turnover	\$0.03	74	75	AEO 2013
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	17.42	15	\$11.60	100%	at stock turnover	\$0.04	104	207	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	17.77	15	\$5.43	100%	at stock turnover	\$0.06	11	32	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	82.26	3	\$862.84	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	28.17	10	\$4,000.44	15%	24%	\$0.06	0	1	6th Plan
Misc. Mfg	Exterior Lighting	Energy Management System	per Facility	New	75.28	15	\$48,242.06	20%	50%	\$0.22	1	1	BEST Simulation
Misc. Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	247.21	5	\$76.45	15%	25%	\$0.05	1	1	Illinois TRM
Misc. Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	101.30	10	\$110.22	44%	60%	\$0.09	1	1	AEG research & analysis
Misc. Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,306.57	10	\$1,222.91	15%	30%	\$0.08	8	12	AEG research & analysis
Misc. Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	226.87	15	\$67.77	100%	at stock turnover	\$0.01	64	72	AEO 2013
Misc. Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	14.20	15	\$13.65	100%	at stock turnover	\$0.06	33	36	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	17.42	15	\$11.60	100%	at stock turnover	\$0.04	46	88	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	17.77	15	\$5.43	100%	at stock turnover	\$0.07	2	6	EIA 2011/Developed from RTF
Misc. Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	71.51	3	\$697.64	0%	5%	\$0.01	0	0	BEST Simulation
Misc. Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	6.12	32	\$11,677.94	15%	52%	\$0.44	0	0	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,952.47	23	\$67,836.70	2%	at stock turnover	\$0.22	7	6	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$27,641.51	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	Existing	24,552.36	15	\$58,254.19	20%	50%	\$0.24	60	61	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,367.94	23	\$51,933.68	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	4,328.85	18	\$19,940.84	15%	75%	\$0.14	4	4	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,765.08	18	\$2,114.31	15%	25%	\$0.09	1	1	BEST Simulation
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	99,092.06	45	\$257,572.84	15%	25%	\$0.21	82	82	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,881.47	20	\$4,017.55	15%	25%	\$0.10	2	2	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	37,260.05	45	\$35,802.52	45%	50%	\$0.08	15	15	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	Existing	21,579.28	3	\$862.84	0%	5%	\$0.01	9	9	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$108.66	10%	10%	\$10.00	0	0	BEST Simulation
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	7,456.68	10	\$4,000.44	15%	24%	\$0.06	6	6	6th Plan
Misc. Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	11,470.39	23	\$59,026.16	2%	at stock turnover	\$0.21	6	6	BEST Simulation
Misc. Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$18,267.35	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Heating	Energy Management System	per Facility	New	23,053.05	15	\$48,242.06	20%	50%	\$0.22	18	18	BEST Simulation
Misc. Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	8,067.01	23	\$38,918.36	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Misc. Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,801.81	18	\$14,648.91	15%	75%	\$0.14	1	1	AEG research & analysis
Misc. Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-37.24	18	\$758.54	15%	25%	\$0.12	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	93,365.02	45	\$205,960.57	15%	25%	\$0.19	24	24	BEST Simulation
Misc. Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	183.07	20	\$2,170.86	15%	25%	\$0.12	0	0	BEST Simulation
Misc. Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,965.67	45	\$4,266.23	45%	50%	\$0.08	1	1	BEST Simulation
Misc. Mfg	Heating	Strategic Energy Management	per Facility	New	20,271.42	3	\$697.64	0%	5%	\$0.01	3	3	BEST Simulation
Misc. Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$291.49	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,872.86	32	\$11,677.94	15%	52%	\$0.44	2	2	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	Existing	466.75	15	\$58,254.19	20%	50%	\$0.24	17	27	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	422.76	15	\$126.29	100%	at stock turnover	\$0.01	1,127	1,143	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	1,707.61	5	\$520.92	5%	40%	\$0.05	24	50	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	2,206.80	5	\$694.51	15%	50%	\$0.05	30	65	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	2,912.74	12	\$4,669.84	3%	25%	\$0.14	79	155	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	500.52	16	\$85.95	1%	3%	\$0.02	1	3	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	3,334.61	10	\$1,024.20	7%	60%	\$0.03	169	303	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$8,003.09	15%	30%	\$10.00	0	0	DEER
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,003.12	8	\$403.60	7%	15%	\$0.05	11	21	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	192.15	5	\$21.80	10%	25%	\$0.01	1	3	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.27	15	\$19.49	100%	at stock turnover	\$0.05	573	610	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	27.16	15	\$18.08	100%	at stock turnover	\$0.04	117	233	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	27.71	15	\$8.47	100%	at stock turnover	\$0.06	13	36	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	483.04	3	\$862.84	0%	5%	\$0.01	3	6	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	145.71	10	\$4,000.44	15%	24%	\$0.06	2	3	6th Plan
Misc. Mfg	Interior Lighting	Energy Management System	per Facility	New	437.27	15	\$48,242.06	20%	50%	\$0.22	5	8	BEST Simulation
Misc. Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	422.76	15	\$126.29	100%	at stock turnover	\$0.01	493	549	AEO 2013
Misc. Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,416.25	5	\$520.40	5%	40%	\$0.06	7	10	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	1,828.70	5	\$693.86	15%	50%	\$0.06	9	13	Illinois TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	2,724.04	12	\$4,389.86	4%	25%	\$0.13	23	33	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	452.06	16	\$85.63	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	3,010.88	10	\$1,052.83	22%	60%	\$0.03	28	40	Ameren Missouri TRM
Misc. Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$8,003.09	18%	30%	\$10.00	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	935.39	8	\$392.87	7%	15%	\$0.04	3	5	CA - DEER
Misc. Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	135.52	5	\$21.67	10%	25%	\$0.02	0	0	AEG research & analysis
Misc. Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.27	15	\$19.49	100%	at stock turnover	\$0.06	252	277	AEO 2013
Misc. Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	27.16	15	\$18.08	100%	at stock turnover	\$0.04	52	99	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	27.71	15	\$8.47	100%	at stock turnover	\$0.07	2	7	EIA 2011/Developed from RTF
Misc. Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	435.89	3	\$697.64	0%	5%	\$0.01	1	1	BEST Simulation
Misc. Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	35.54	32	\$11,677.94	15%	52%	\$0.44	1	1	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$32.53	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,330.55	3	\$745.07	5%	39%	\$0.07	58	58	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,155.89	3	\$862.84	0%	5%	\$0.01	7	7	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	399.41	10	\$4,000.44	15%	24%	\$0.06	5	5	6th Plan
Misc. Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$32.53	0%	0%	\$10.00	0	0	MI - TRM
Misc. Mfg	Miscellaneous	Commissioning	per Facility	New	1,331.93	3	\$745.07	5%	39%	\$0.07	16	16	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,155.89	3	\$697.64	0%	5%	\$0.01	2	2	BEST Simulation
Misc. Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	108.07	32	\$11,677.94	15%	52%	\$0.44	1	1	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	5,709.14	10	\$131.56	15%	75%	\$0.00	224	224	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	6,430.00	15	\$847.35	15%	50%	\$0.01	144	150	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	1,419.34	15	\$369.25	15%	38%	\$0.03	20	22	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	165.67	5	\$22.71	15%	50%	\$0.03	4	4	MI - TRM
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	2,728.68	20	\$1,586.50	15%	50%	\$0.05	58	66	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	1,417.44	15	\$371.98	15%	38%	\$0.03	20	22	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	3,011.74	10	\$825.75	15%	50%	\$0.04	66	72	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$487.99	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	2,375.15	15	\$875.00	8%	38%	\$0.04	44	49	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	1,355.95	3	\$93.30	8%	38%	\$0.02	25	28	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	3,890.09	15	\$1,399.96	8%	38%	\$0.04	72	80	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$130.13	15%	50%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	9,932.55	10	\$1,030.58	8%	38%	\$0.02	193	195	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	Existing	3,350.28	15	\$300.60	8%	38%	\$0.01	66	66	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	Existing	1,694.85	3	\$85.50	8%	38%	\$0.02	32	33	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	5,057.76	10	\$769.53	8%	38%	\$0.02	94	99	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	258.38	8	\$330.86	10%	50%	\$0.21	32	34	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	183.33	8	\$117.31	5%	25%	\$0.10	11	12	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$204.63	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$42.81	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$0.20	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	4,699.98	17	\$298.46	5%	6%	\$0.01	15	15	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	724.11	10	\$140.22	15%	36%	\$0.03	48	51	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	4,608.13	17	\$716.70	25%	44%	\$0.02	282	286	RSMeans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$57.39	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$27.78	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	1,403.72	10	\$417.14	8%	38%	\$0.04	27	28	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	Existing	1,417.90	15	\$508.62	8%	38%	\$0.04	27	28	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	740.73	3	\$144.64	8%	38%	\$0.07	14	15	Scaled from Optimization

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	2,285.25	12	\$1,412.77	8%	38%	\$0.08	43	45	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	Existing	1,772.13	3	\$745.07	5%	39%	\$0.07	189	197	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	Existing	1,624.53	3	\$862.84	0%	5%	\$0.01	26	27	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$16.07	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	532.26	10	\$4,000.44	15%	24%	\$0.06	16	16	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$256.23	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Commissioning	per Facility	New	1,758.03	3	\$745.07	5%	39%	\$0.07	59	59	Energy Management Program Design for PC
Misc. Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	5,709.14	10	\$131.56	15%	75%	\$0.00	68	68	MI - TRM
Misc. Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	6,362.23	15	\$847.35	15%	50%	\$0.01	44	44	OH - TRM
Misc. Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	1,423.15	15	\$369.25	15%	38%	\$0.03	6	6	MI - TRM
Misc. Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	166.23	5	\$22.71	15%	50%	\$0.03	1	1	MI - TRM
Misc. Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	2,745.65	20	\$1,586.50	15%	50%	\$0.05	19	19	MI - TRM
Misc. Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	1,421.87	15	\$371.98	15%	38%	\$0.03	6	6	MI - TRM
Misc. Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	3,022.23	10	\$825.75	15%	50%	\$0.04	21	21	VT - TRM
Misc. Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$487.99	15%	30%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Compressed Air - System Controls	per Facility	New	2,388.41	15	\$875.00	8%	38%	\$0.04	14	14	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	1,359.04	3	\$93.30	8%	38%	\$0.02	8	8	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	3,907.57	15	\$1,399.96	8%	38%	\$0.04	23	23	AEG study for State of New Mexico
Misc. Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$130.13	15%	50%	\$10.00	0	0	VT - TRM
Misc. Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	9,750.83	10	\$1,030.58	8%	38%	\$0.02	58	58	6th Plan
Misc. Mfg	Motors	Fan System - Controls	per Facility	New	3,296.03	15	\$300.60	8%	38%	\$0.01	20	20	Scaled from Optimization
Misc. Mfg	Motors	Fan System - Maintenance	per Facility	New	1,661.34	3	\$85.50	8%	38%	\$0.02	10	10	Scaled from Optimization

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	4,947.25	10	\$769.53	8%	38%	\$0.02	30	30	6th Plan
Misc. Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	255.38	8	\$330.86	10%	50%	\$0.21	10	10	Developed from RTF
Misc. Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	181.20	8	\$117.31	5%	25%	\$0.10	4	4	Developed from RTF
Misc. Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$204.63	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$42.81	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$0.20	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	4,703.52	17	\$298.46	5%	6%	\$0.01	5	5	E3T Website
Misc. Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	718.18	10	\$140.22	15%	36%	\$0.03	15	15	6th Plan
Misc. Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	4,693.60	17	\$430.02	25%	44%	\$0.01	89	89	RSMeans 2013
Misc. Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$57.39	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$27.78	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	1,392.99	10	\$417.14	8%	38%	\$0.04	8	8	6th Plan
Misc. Mfg	Motors	Pumping System - Controls	per Facility	New	1,412.59	15	\$508.62	8%	38%	\$0.04	8	8	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Maintenance	per Facility	New	732.62	3	\$144.64	8%	38%	\$0.07	4	4	Scaled from Optimization
Misc. Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	2,248.74	12	\$1,412.77	8%	38%	\$0.08	13	13	6th Plan
Misc. Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Motors	Strategic Energy Management	per Facility	New	1,629.29	3	\$697.64	0%	5%	\$0.01	8	8	BEST Simulation
Misc. Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$16.07	15%	25%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Motors	Transformer - High Efficiency	per Facility	New	141.96	32	\$11,677.94	15%	52%	\$0.44	5	5	6th Plan
Misc. Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$256.23	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$129.61	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$13.14	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$61.94	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$73.85	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$2,989.77	0%	0%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$47.30	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,282.96	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$253.50	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,320.25	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$38.39	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$11.39	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$66.89	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$2,292.27	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$968.89	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$16.59	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,084.06	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$7,279.17	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	Existing	113.38	5	\$14.84	15%	75%	\$0.03	4	4	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,130.79	10	\$297.09	15%	75%	\$0.04	44	44	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	Existing	293.37	5	\$705.25	15%	75%	\$0.57	57	57	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	291.29	15	\$373.35	15%	50%	\$0.15	7	7	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	Existing	558.76	18	\$896.09	15%	50%	\$0.16	12	13	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	195.99	3	\$49.78	15%	50%	\$0.09	4	5	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	574.55	15	\$746.70	15%	50%	\$0.15	13	13	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	Existing	119.33	3	\$745.07	5%	39%	\$0.07	66	13	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	Existing	434.79	3	\$862.84	0%	5%	\$0.01	7	7	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	Existing	149.24	10	\$4,000.44	15%	24%	\$0.06	5	5	6th Plan
Misc. Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$129.61	0%	0%	\$10.00	0	0	PA - TRM
Misc. Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$13.14	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$61.94	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$73.85	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Commissioning	per Facility	New	119.20	3	\$745.07	5%	39%	\$0.07	20	9	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$2,989.77	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$47.30	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,282.96	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$253.50	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,320.25	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$38.39	0%	0%	\$10.00	0	0	MT - IRP 2013
Misc. Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$11.39	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$66.89	0%	0%	\$10.00	0	0	OPA - TRM
Misc. Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$2,292.27	0%	0%	\$10.00	0	0	VT - TRM
Misc. Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$968.89	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$16.59	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,084.06	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$7,279.17	0%	0%	\$10.00	0	0	6th Plan
Misc. Mfg	Process	Process - Conductivity Controls	per Facility	New	113.43	5	\$14.84	15%	75%	\$0.03	1	1	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	1,130.09	10	\$297.09	15%	75%	\$0.04	14	14	AEG study for State of New Mexico
Misc. Mfg	Process	Process - Timers and Controls	per Facility	New	291.73	5	\$705.25	15%	75%	\$0.57	17	17	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	290.03	15	\$373.35	15%	50%	\$0.15	2	2	Developed from RTF
Misc. Mfg	Process	Refrigeration - System Controls	per Facility	New	557.74	18	\$896.09	15%	50%	\$0.16	4	4	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Maintenance	per Facility	New	195.04	3	\$49.78	15%	50%	\$0.09	1	1	AEG study for State of New Mexico
Misc. Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	572.55	15	\$746.70	15%	50%	\$0.15	4	4	AEG study for State of New Mexico
Misc. Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Misc. Mfg	Process	Strategic Energy Management	per Facility	New	434.79	3	\$697.64	0%	5%	\$0.01	2	2	BEST Simulation
Misc. Mfg	Process	Transformer - High Efficiency	per Facility	New	39.91	32	\$11,677.94	15%	52%	\$0.44	1	1	6th Plan
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$27,641.51	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	436.17	3	\$862.84	0%	5%	\$0.01	1	2	BEST Simulation
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	150.52	10	\$4,000.44	15%	24%	\$0.06	1	1	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	159.76	15	\$46.00	15%	35%	\$0.03	2	2	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,967.03	20	\$7,224.30	100%	at stock turnover	\$0.15	37	37	BEST Simulation
Misc. Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$18,267.35	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Misc. Mfg	Ventilation	Strategic Energy Management	per Facility	New	156.68	3	\$697.64	0%	5%	\$0.01	0	0	BEST Simulation
Misc. Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	14.78	32	\$11,677.94	15%	52%	\$0.44	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	57.41	15	\$21.34	15%	35%	\$0.04	0	0	6th Plan
Misc. Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,773.29	20	\$4,495.65	100%	at stock turnover	\$0.17	6	6	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	24,541.85	23	\$63,080.90	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	14,052.90	23	\$7,777.19	6%	at stock turnover	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,159.81	10	\$2,282.08	15%	45%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,887.94	15	\$1,213.87	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	351.34	15	\$291.33	15%	75%	\$0.09	0	0	BEST Simulation
Paper Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	Existing	12,013.01	15	\$38,202,947.63	15%	50%	\$316.69	0	0	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	10,614.85	12	\$19,616.16	15%	50%	\$0.22	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	Existing	3,142.15	15	\$41,854.27	20%	50%	\$0.17	0	0	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	23,686.13	23	\$56,820.54	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	9,789.80	18	\$14,178.01	15%	75%	\$0.10	0	0	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	699.20	18	\$1,505.20	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	Existing	4,269.16	10	\$9,371.08	18%	30%	\$0.10	0	0	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	6,421.50	45	\$182,954.63	15%	25%	\$0.16	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,005.15	20	\$2,864.74	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-130.62	45	\$25,442.74	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	19,224.16	23	\$64,722.41	4%	at stock turnover	\$0.35	0	0	BEST Simulation
Paper Mfg	Cooling	Strategic Energy Management	per Facility	Existing	2,845.87	3	\$4,855.48	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$8,108.66	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	976.88	10	\$4,758.37	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	22,432.69	23	\$11,767.22	3%	at stock turnover	\$0.05	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	6,326.09	10	\$1,845.08	15%	45%	\$0.04	0	0	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	9,452.63	4	\$1,213.87	15%	50%	\$0.03	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,581.40	15	\$1,747.97	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	335.95	15	\$291.33	15%	75%	\$0.09	0	0	BEST Simulation
Paper Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	18,581.64	23	\$47,271.90	2%	at stock turnover	\$0.15	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	989.44	23	\$990,894,895.38	6%	at stock turnover	\$104,243.75	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,455.72	10	\$1,747.97	15%	45%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,334.46	15	\$873.99	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$124,300.39	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Cool Roofs - Absorptivity 0.2	per Facility	New	6,800.76	15	\$38,202,947.63	15%	50%	\$550.21	0	0	BEST Simulation
Paper Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	6,005.05	12	\$12,964.14	15%	50%	\$0.25	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Cooling	Energy Management System	per Facility	New	1,782.59	15	\$34,716.71	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	18,007.84	23	\$42,580.48	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	6,412.21	18	\$10,390.74	15%	75%	\$0.11	0	0	AEG research & analysis
Paper Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	623.53	18	\$534.10	15%	25%	\$0.09	0	0	BEST Simulation
Paper Mfg	Cooling	HVAC - Economizer	per Facility	New	2,339.01	10	\$5,535.25	18%	30%	\$0.11	0	0	DEER
Paper Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	424.33	45	\$146,295.73	15%	25%	\$0.14	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,449.07	20	\$1,553.75	15%	25%	\$0.09	0	0	BEST Simulation
Paper Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-53.06	45	\$3,010.40	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Cooling	RTU - EER 12.0	per Facility	New	11,364.98	23	\$37,803.50	4%	at stock turnover	\$0.35	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Cooling	Strategic Energy Management	per Facility	New	1,605.06	3	\$4,272.83	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$21,752.57	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Cooling	Transformer - High Efficiency	per Facility	New	139.55	32	\$14,954.89	15%	52%	\$0.38	0	0	6th Plan
Paper Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	13,741.16	23	\$8,791.38	3%	at stock turnover	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,225.42	10	\$1,116.76	15%	45%	\$0.04	0	0	DEER
Paper Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	4,859.61	4	\$776.88	15%	50%	\$0.04	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,370.59	15	\$1,116.76	15%	60%	\$0.07	0	0	BEST Simulation
Paper Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$192,422.83	15%	75%	\$10.00	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	123.77	15	\$41,854.27	20%	50%	\$0.17	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	411.29	5	\$97.11	15%	25%	\$0.04	0	0	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	160.17	10	\$194.22	33%	60%	\$0.12	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,154.92	10	\$1,213.87	15%	30%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	0	0	EIA 2011/Developed from RTF
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	117.75	3	\$4,855.48	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.43	10	\$4,758.37	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Exterior Lighting	Energy Management System	per Facility	New	108.20	15	\$34,716.71	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.54	5	\$97.11	15%	25%	\$0.04	0	0	Illinois TRM
Paper Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	156.91	10	\$97.11	44%	60%	\$0.06	0	0	AEG research & analysis
Paper Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,865.67	10	\$1,213.87	15%	30%	\$0.06	0	0	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	0	0	AEO 2013
Paper Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	102.36	3	\$4,272.83	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.79	32	\$14,954.89	15%	52%	\$0.38	0	0	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,626.87	23	\$48,180.23	2%	at stock turnover	\$0.17	0	0	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$19,616.16	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	Existing	23,246.76	15	\$41,854.27	20%	50%	\$0.17	0	0	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,257.05	23	\$36,885.30	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	4,098.67	18	\$14,178.01	15%	75%	\$0.10	0	0	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,671.22	18	\$1,505.20	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	93,822.46	45	\$182,954.63	15%	25%	\$0.16	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,781.42	20	\$2,864.74	15%	25%	\$0.07	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	35,278.58	45	\$25,442.74	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	Existing	20,568.66	3	\$4,855.48	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$8,108.66	10%	10%	\$10.00	0	0	BEST Simulation
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	7,060.14	10	\$4,758.37	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	10,933.20	23	\$41,922.65	2%	at stock turnover	\$0.15	0	0	BEST Simulation
Paper Mfg	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$12,964.14	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Heating	Energy Management System	per Facility	New	21,861.63	15	\$34,716.71	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,689.21	23	\$27,641.31	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Paper Mfg	Heating	Heat Pump - Maintenance	per Facility	New	2,657.01	18	\$10,390.74	15%	75%	\$0.11	0	0	AEG research & analysis
Paper Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-35.32	18	\$534.10	15%	25%	\$0.09	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	88,539.48	45	\$146,295.73	15%	25%	\$0.14	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	173.61	20	\$1,553.75	15%	25%	\$0.09	0	0	BEST Simulation
Paper Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,709.02	45	\$3,010.40	45%	50%	\$0.06	0	0	BEST Simulation
Paper Mfg	Heating	Strategic Energy Management	per Facility	New	19,322.06	3	\$4,272.83	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$21,752.57	10%	10%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Heating	Transformer - High Efficiency	per Facility	New	1,776.07	32	\$14,954.89	15%	52%	\$0.38	0	0	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	Existing	670.12	15	\$41,854.27	20%	50%	\$0.17	0	0	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,369.38	5	\$534.10	5%	40%	\$0.03	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,294.27	5	\$679.77	15%	50%	\$0.03	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,181.79	12	\$4,661.26	3%	25%	\$0.10	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	724.54	16	\$97.11	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,827.06	10	\$1,019.65	7%	60%	\$0.02	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$5,972,245.25	15%	30%	\$10.00	0	0	DEER
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,452.05	8	\$388.44	7%	15%	\$0.03	0	0	CA - DEER
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	0.00	5	\$0.00	10%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	0	0	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	609.35	3	\$4,855.48	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	209.20	10	\$4,758.37	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Interior Lighting	Energy Management System	per Facility	New	628.75	15	\$34,716.71	20%	50%	\$0.16	0	0	BEST Simulation
Paper Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	0	0	AEO 2013
Paper Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,962.06	5	\$534.10	5%	40%	\$0.04	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,731.09	5	\$679.77	15%	50%	\$0.04	0	0	Illinois TRM
Paper Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,916.78	12	\$4,369.94	4%	25%	\$0.09	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	653.81	16	\$97.11	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,356.38	10	\$1,068.21	22%	60%	\$0.02	0	0	Ameren Missouri TRM
Paper Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$5,972,245.25	18%	30%	\$10.00	0	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,353.39	8	\$388.44	7%	15%	\$0.03	0	0	CA - DEER
Paper Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	0.00	5	\$0.00	10%	25%	\$10.00	0	0	AEG research & analysis
Paper Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	0	0	AEO 2013
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	0	0	EIA 2011/Developed from RTF
Paper Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	569.31	3	\$4,272.83	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.10	32	\$14,954.89	15%	52%	\$0.38	0	0	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$2,427.74	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	2,337.75	3	\$3,156.06	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,044.49	3	\$4,855.48	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	701.76	10	\$4,758.37	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$2,427.74	0%	0%	\$10.00	0	0	MI - TRM
Paper Mfg	Miscellaneous	Commissioning	per Facility	New	2,343.87	3	\$3,156.06	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	2,044.49	3	\$4,272.83	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	190.71	32	\$14,954.89	15%	52%	\$0.38	0	0	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	16,275.38	10	\$485.55	15%	75%	\$0.00	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	18,362.41	15	\$3,204.62	15%	50%	\$0.02	0	0	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	4,042.26	15	\$1,408.09	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	469.15	5	\$97.11	15%	50%	\$0.04	0	0	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	7,681.55	20	\$5,972.25	15%	50%	\$0.07	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	4,047.81	15	\$1,408.09	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	8,528.94	10	\$3,107.51	15%	50%	\$0.05	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$36,416.13	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	6,881.07	15	\$3,301.73	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	3,872.22	3	\$339.88	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	10,850.86	15	\$5,292.48	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$9,710.97	15%	50%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	48,309.00	10	\$6,263.57	8%	38%	\$0.02	0	0	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	Existing	16,266.30	15	\$1,845.08	8%	38%	\$0.01	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	Existing	8,243.23	3	\$534.10	8%	38%	\$0.02	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	24,599.36	10	\$4,709.82	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,958.62	8	\$3,010.40	10%	50%	\$0.25	0	0	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,389.67	8	\$1,068.21	5%	25%	\$0.12	0	0	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$15,246.22	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	85,204.41	10	\$7,137.56	15%	29%	\$0.01	0	0	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	709.45	1	\$48.55	15%	52%	\$0.06	0	0	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	35,490.00	17	\$2,719.07	5%	6%	\$0.01	0	0	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	5,485.07	10	\$1,262.43	15%	36%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	35,014.38	17	\$6,554.90	25%	44%	\$0.02	0	0	RSMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$9,565.30	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	24,489.07	10	\$4,612.71	15%	29%	\$0.03	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	29,589.64	10	\$5,680.92	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	Existing	29,888.72	15	\$6,894.79	8%	38%	\$0.03	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	15,450.11	3	\$1,942.19	8%	38%	\$0.05	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	47,995.97	12	\$19,179.16	8%	38%	\$0.05	0	0	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	Existing	13,402.11	3	\$3,156.06	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	Existing	11,841.49	3	\$4,855.48	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,670.52	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	4,052.40	10	\$4,758.37	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,233.52	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Commissioning	per Facility	New	13,253.12	3	\$3,156.06	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	16,275.38	10	\$485.55	15%	75%	\$0.00	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	18,161.38	15	\$3,204.62	15%	50%	\$0.02	0	0	OH - TRM
Paper Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	4,028.21	15	\$1,408.09	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	471.50	5	\$97.11	15%	50%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	7,728.34	20	\$5,972.25	15%	50%	\$0.07	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	4,082.56	15	\$1,408.09	15%	38%	\$0.04	0	0	MI - TRM
Paper Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	8,572.12	10	\$3,107.51	15%	50%	\$0.05	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$36,416.13	15%	30%	\$10.00	0	0	VT - TRM
Paper Mfg	Motors	Compressed Air - System Controls	per Facility	New	6,774.47	15	\$3,301.73	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	3,879.47	3	\$339.88	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	11,083.31	15	\$5,292.48	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Paper Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$9,710.97	15%	50%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	47,405.58	10	\$6,263.57	8%	38%	\$0.02	0	0	6th Plan
Paper Mfg	Motors	Fan System - Controls	per Facility	New	16,024.32	15	\$1,845.08	8%	38%	\$0.01	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Maintenance	per Facility	New	8,076.93	3	\$534.10	8%	38%	\$0.02	0	0	Scaled from Optimization
Paper Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	24,051.92	10	\$4,709.82	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,932.52	8	\$3,010.40	10%	50%	\$0.25	0	0	Developed from RTF
Paper Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	1,371.18	8	\$1,068.21	5%	25%	\$0.12	0	0	Developed from RTF
Paper Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$15,246.22	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	83,936.90	10	\$7,137.56	15%	29%	\$0.01	0	0	6th Plan
Paper Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	695.17	1	\$48.55	15%	52%	\$0.06	0	0	6th Plan
Paper Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	35,500.07	17	\$2,719.07	5%	6%	\$0.01	0	0	E3T Website
Paper Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	5,421.56	10	\$1,262.43	15%	36%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	35,472.68	17	\$3,932.94	25%	44%	\$0.01	0	0	RSMeans 2013
Paper Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$9,565.30	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	24,074.08	10	\$4,612.71	15%	29%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	29,346.31	10	\$5,680.92	8%	38%	\$0.03	0	0	6th Plan
Paper Mfg	Motors	Pumping System - Controls	per Facility	New	29,759.45	15	\$6,894.79	8%	38%	\$0.03	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Maintenance	per Facility	New	15,295.69	3	\$1,942.19	8%	38%	\$0.05	0	0	Scaled from Optimization
Paper Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	47,445.81	12	\$19,179.16	8%	38%	\$0.05	0	0	6th Plan
Paper Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Motors	Strategic Energy Management	per Facility	New	11,706.63	3	\$4,272.83	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,670.52	15%	25%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Motors	Transformer - High Efficiency	per Facility	New	1,074.28	32	\$14,954.89	15%	52%	\$0.38	0	0	6th Plan
Paper Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,233.52	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,747.97	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$48.55	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$291.33	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$339.88	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$223,109.49	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$242.77	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$11,167.61	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$1,262.43	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$11,361.83	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$97.11	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$825.43	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$5,001.15	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$171,058.70	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	6,529.48	10	\$2,427.74	15%	25%	\$0.06	0	0	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	71.61	5	\$48.55	15%	38%	\$0.16	0	0	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$5,826.58	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	8,101.42	10	\$18,353.73	15%	40%	\$0.33	0	0	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	Existing	257.59	5	\$97.11	15%	75%	\$0.09	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,646.51	10	\$1,456.65	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	Existing	1,252.23	5	\$1,796.53	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	818.59	15	\$388.44	15%	50%	\$0.06	0	0	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,552.86	18	\$971.10	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	559.37	3	\$48.55	15%	50%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,614.60	15	\$776.88	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	Existing	485.13	3	\$3,156.06	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	Existing	1,903.46	3	\$4,855.48	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	Existing	653.36	10	\$4,758.37	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,747.97	0%	0%	\$10.00	0	0	PA - TRM
Paper Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$48.55	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$291.33	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$339.88	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Commissioning	per Facility	New	485.36	3	\$3,156.06	10%	35%	\$0.06	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$223,109.49	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$242.77	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$11,167.61	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$1,262.43	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$11,361.83	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$97.11	0%	0%	\$10.00	0	0	MT - IRP 2013
Paper Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$825.43	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$5,001.15	0%	0%	\$10.00	0	0	OPA - TRM
Paper Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$171,058.70	0%	0%	\$10.00	0	0	VT - TRM
Paper Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	6,546.84	10	\$2,427.74	15%	25%	\$0.06	0	0	6th Plan
Paper Mfg	Process	Mech Pulp: Premium Process	per Facility	New	71.36	5	\$48.55	15%	38%	\$0.16	0	0	6th Plan
Paper Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$5,826.58	0%	0%	\$10.00	0	0	6th Plan
Paper Mfg	Process	Paper: Premium Control Large Material	per Facility	New	8,073.30	10	\$18,353.73	15%	40%	\$0.33	0	0	6th Plan
Paper Mfg	Process	Process - Conductivity Controls	per Facility	New	254.35	5	\$97.11	15%	75%	\$0.09	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,641.21	10	\$1,456.65	15%	75%	\$0.08	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Process - Timers and Controls	per Facility	New	1,237.41	5	\$1,796.53	15%	75%	\$0.33	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	819.19	15	\$388.44	15%	50%	\$0.06	0	0	Developed from RTF
Paper Mfg	Process	Refrigeration - System Controls	per Facility	New	1,551.06	18	\$971.10	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Maintenance	per Facility	New	559.37	3	\$48.55	15%	50%	\$0.03	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,617.16	15	\$776.88	15%	50%	\$0.06	0	0	AEG study for State of New Mexico
Paper Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Paper Mfg	Process	Strategic Energy Management	per Facility	New	1,903.53	3	\$4,272.83	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Process	Transformer - High Efficiency	per Facility	New	167.24	32	\$14,954.89	15%	52%	\$0.38	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$19,616.16	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	415.18	3	\$4,855.48	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	142.52	10	\$4,758.37	15%	24%	\$0.05	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	152.54	15	\$48.55	15%	35%	\$0.03	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,734.41	20	\$5,130.98	100%	at stock turnover	\$0.11	0	0	BEST Simulation
Paper Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$12,964.14	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Paper Mfg	Ventilation	Strategic Energy Management	per Facility	New	149.34	3	\$4,272.83	0%	24%	\$0.04	0	0	BEST Simulation
Paper Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	14.04	32	\$14,954.89	15%	52%	\$0.38	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	0.00	15	\$0.00	15%	35%	\$10.00	0	0	6th Plan
Paper Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,643.41	20	\$3,192.99	100%	at stock turnover	\$0.13	0	0	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	34,073.28	23	\$87,579.91	2%	at stock turnover	\$0.17	38	36	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	19,510.68	23	\$10,797.65	6%	at stock turnover	\$0.06	48	48	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	11,309.11	10	\$3,143.75	15%	45%	\$0.04	13	15	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,558.50	15	\$1,693.14	15%	60%	\$0.07	4	5	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	476.16	15	\$424.33	15%	75%	\$0.09	1	1	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	18,193.25	15	\$8,976.70	15%	50%	\$0.05	64	71	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	Existing	14,392.66	12	\$27,256.67	15%	50%	\$0.22	48	61	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	Existing	4,260.17	15	\$57,465.04	20%	50%	\$0.18	12	14	BEST Simulation
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	32,885.22	23	\$78,888.19	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	Existing	13,272.98	18	\$19,663.21	15%	75%	\$0.10	12	15	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	947.76	18	\$2,084.87	15%	25%	\$0.07	1	1	BEST Simulation
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	Existing	5,786.96	10	\$13,021.52	18%	30%	\$0.10	10	4	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	8,705.98	45	\$253,986.67	15%	25%	\$0.16	8	10	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,718.06	20	\$3,961.63	15%	25%	\$0.07	3	3	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-177.05	45	\$35,304.04	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	Existing	26,690.34	23	\$89,858.94	4%	at stock turnover	\$0.35	11	11	BEST Simulation
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	Existing	4,024.89	3	\$1,565.96	0%	5%	\$0.01	2	2	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$19.05	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	Existing	1,365.32	10	\$7,396.78	15%	24%	\$0.05	1	1	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	31,144.98	23	\$16,337.31	3%	at stock turnover	\$0.05	39	39	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,767.72	10	\$2,533.85	15%	45%	\$0.04	5	6	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	13,100.95	4	\$1,709.35	15%	50%	\$0.03	9	10	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,500.67	15	\$2,394.83	15%	60%	\$0.07	3	4	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	455.62	15	\$421.18	15%	75%	\$0.09	0	1	BEST Simulation
Petroleum Refining	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	25,798.28	23	\$65,631.11	2%	at stock turnover	\$0.15	16	16	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	11,907.72	23	\$18,626.77	6%	at stock turnover	\$0.16	18	18	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	7,962.41	10	\$2,454.86	15%	45%	\$0.04	3	3	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,656.74	15	\$1,183.59	15%	60%	\$0.07	1	1	BEST Simulation
Petroleum Refining	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$292.05	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	9,729.57	15	\$8,976.70	15%	50%	\$0.09	11	12	BEST Simulation
Petroleum Refining	Cooling	Destratification Fans (HVLS)	per Facility	New	7,665.07	12	\$18,013.00	15%	50%	\$0.25	9	9	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Cooling	Energy Management System	per Facility	New	2,275.27	15	\$47,592.22	20%	50%	\$0.16	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	25,001.63	23	\$59,117.66	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Heat Pump - Maintenance	per Facility	New	8,564.37	18	\$14,444.98	15%	75%	\$0.11	2	3	AEG research & analysis
Petroleum Refining	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	829.75	18	\$747.98	15%	25%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Cooling	HVAC - Economizer	per Facility	New	2,954.77	10	\$7,687.41	18%	30%	\$0.11	2	1	DEER
Petroleum Refining	Cooling	Insulation - Ceiling - R-38	per Facility	New	541.61	45	\$203,092.97	15%	25%	\$0.14	0	0	BEST Simulation
Petroleum Refining	Cooling	Insulation - Ducting - R-8	per Facility	New	1,935.05	20	\$2,140.61	15%	25%	\$0.09	1	1	BEST Simulation
Petroleum Refining	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-70.76	45	\$4,206.87	45%	50%	\$0.06	0	0	BEST Simulation
Petroleum Refining	Cooling	RTU - EER 12.0	per Facility	New	15,778.85	23	\$52,485.42	4%	at stock turnover	\$0.35	4	4	BEST Simulation
Petroleum Refining	Cooling	Strategic Energy Management	per Facility	New	2,172.21	3	\$1,403.08	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$51.11	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Cooling	Transformer - High Efficiency	per Facility	New	178.15	32	\$23,486.71	15%	52%	\$0.40	0	0	6th Plan
Petroleum Refining	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	19,077.88	23	\$12,205.73	3%	at stock turnover	\$0.07	15	15	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,472.17	10	\$1,549.72	15%	45%	\$0.04	1	1	DEER
Petroleum Refining	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	6,738.01	4	\$1,055.54	15%	50%	\$0.04	1	2	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,912.51	15	\$1,518.93	15%	60%	\$0.07	1	1	BEST Simulation
Petroleum Refining	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$452.10	15%	75%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	Existing	124.58	15	\$57,465.04	20%	50%	\$0.18	5	8	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	410.59	5	\$76.79	15%	25%	\$0.03	6	11	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.21	10	\$179.91	33%	60%	\$0.11	6	13	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,169.05	10	\$1,228.74	15%	30%	\$0.06	46	91	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	242	245	AEO 2013

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	122	124	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	171	342	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	19	53	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$1,565.96	0%	5%	\$0.01	1	2	BEST Simulation
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.69	10	\$7,396.78	15%	24%	\$0.05	1	1	6th Plan
Petroleum Refining	Exterior Lighting	Energy Management System	per Facility	New	108.74	15	\$47,592.22	20%	50%	\$0.16	1	2	BEST Simulation
Petroleum Refining	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.08	5	\$76.43	15%	25%	\$0.03	2	2	Illinois TRM
Petroleum Refining	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.32	10	\$110.22	44%	60%	\$0.06	1	2	AEG research & analysis
Petroleum Refining	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,887.22	10	\$1,222.92	15%	30%	\$0.06	13	19	AEG research & analysis
Petroleum Refining	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	106	118	AEO 2013
Petroleum Refining	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	54	59	AEO 2013
Petroleum Refining	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	76	146	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	3	10	EIA 2011/Developed from RTF
Petroleum Refining	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$1,403.08	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.84	32	\$23,486.71	15%	52%	\$0.40	0	0	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	9,200.58	23	\$66,892.21	2%	at stock turnover	\$0.17	10	10	BEST Simulation
Petroleum Refining	Heating	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$27,256.67	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	Existing	32,491.45	15	\$57,465.04	20%	50%	\$0.18	91	92	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	3,133.63	23	\$51,210.61	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	Existing	5,728.60	18	\$19,663.21	15%	75%	\$0.10	6	6	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,335.83	18	\$2,084.87	15%	25%	\$0.07	2	2	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	Existing	131,133.79	45	\$253,986.67	15%	25%	\$0.16	124	124	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,489.85	20	\$3,961.63	15%	25%	\$0.07	2	2	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	49,308.21	45	\$35,304.04	45%	50%	\$0.06	23	23	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	Existing	28,557.01	3	\$1,565.96	0%	5%	\$0.01	14	14	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$19.05	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	Existing	9,867.83	10	\$7,396.78	15%	24%	\$0.05	9	9	6th Plan
Petroleum Refining	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	15,179.38	23	\$58,204.34	2%	at stock turnover	\$0.15	10	9	BEST Simulation
Petroleum Refining	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$18,013.00	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Heating	Energy Management System	per Facility	New	30,507.32	15	\$47,592.22	20%	50%	\$0.16	27	27	BEST Simulation
Petroleum Refining	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	10,675.50	23	\$38,376.50	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Petroleum Refining	Heating	Heat Pump - Maintenance	per Facility	New	3,707.79	18	\$14,444.98	15%	75%	\$0.11	1	1	AEG research & analysis
Petroleum Refining	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-49.28	18	\$747.98	15%	25%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Ceiling - R-38	per Facility	New	123,554.88	45	\$203,092.97	15%	25%	\$0.14	36	36	BEST Simulation
Petroleum Refining	Heating	Insulation - Ducting - R-8	per Facility	New	242.27	20	\$2,140.61	15%	25%	\$0.09	0	0	BEST Simulation
Petroleum Refining	Heating	Insulation - Wall Cavity - R-23	per Facility	New	6,571.34	45	\$4,206.87	45%	50%	\$0.06	1	1	BEST Simulation
Petroleum Refining	Heating	Strategic Energy Management	per Facility	New	26,826.25	3	\$1,403.08	0%	5%	\$0.01	4	4	BEST Simulation
Petroleum Refining	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$51.11	10%	10%	\$10.00	0	0	BEST Simulation
Petroleum Refining	Heating	Transformer - High Efficiency	per Facility	New	2,478.45	32	\$23,486.71	15%	52%	\$0.40	3	3	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	Existing	674.18	15	\$57,465.04	20%	50%	\$0.18	28	45	BEST Simulation
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	1,856	1,883	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,466.49	5	\$520.90	5%	40%	\$0.03	39	82	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,187.52	5	\$694.53	15%	50%	\$0.03	50	106	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,207.18	12	\$4,669.80	3%	25%	\$0.10	130	256	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	722.96	16	\$85.98	1%	3%	\$0.01	2	4	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,816.54	10	\$1,024.17	7%	60%	\$0.02	278	500	Ameren Missouri TRM

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Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$1,403.32	15%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,448.91	8	\$403.59	7%	15%	\$0.03	18	34	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	278.00	5	\$21.78	10%	25%	\$0.01	1	4	AEG research & analysis
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	944	1,005	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	193	384	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	21	60	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	Existing	697.39	3	\$1,565.96	0%	5%	\$0.01	5	10	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.47	10	\$7,396.78	15%	24%	\$0.05	3	4	6th Plan
Petroleum Refining	Interior Lighting	Energy Management System	per Facility	New	631.60	15	\$47,592.22	20%	50%	\$0.16	9	13	BEST Simulation
Petroleum Refining	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	813	905	AEO 2013
Petroleum Refining	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,045.65	5	\$520.38	5%	40%	\$0.04	11	16	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,641.39	5	\$693.85	15%	50%	\$0.04	15	21	Illinois TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,934.63	12	\$4,389.87	4%	25%	\$0.09	37	54	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	652.96	16	\$85.64	1%	3%	\$0.01	1	1	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,348.94	10	\$1,052.83	22%	60%	\$0.02	46	67	Ameren Missouri TRM
Petroleum Refining	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$1,403.32	18%	30%	\$10.00	0	0	DEER
Petroleum Refining	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,351.09	8	\$392.88	7%	15%	\$0.03	5	8	CA - DEER
Petroleum Refining	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	195.75	5	\$21.63	10%	25%	\$0.01	0	1	AEG research & analysis
Petroleum Refining	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	416	457	AEO 2013
Petroleum Refining	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	85	164	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	4	11	EIA 2011/Developed from RTF
Petroleum Refining	Interior Lighting	Strategic Energy Management	per Facility	New	629.60	3	\$1,403.08	0%	5%	\$0.01	1	2	BEST Simulation
Petroleum Refining	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.33	32	\$23,486.71	15%	52%	\$0.40	1	1	6th Plan

Measure Data and Assumptions

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Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$5.70	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	Existing	1,717.56	3	\$7,848.74	5%	39%	\$0.09	85	85	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,492.10	3	\$1,565.96	0%	5%	\$0.01	11	11	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	515.59	10	\$7,396.78	15%	24%	\$0.05	7	7	6th Plan
Petroleum Refining	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$5.70	0%	0%	\$10.00	0	0	MI - TRM
Petroleum Refining	Miscellaneous	Commissioning	per Facility	New	1,719.35	3	\$7,848.74	5%	39%	\$0.09	24	24	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Miscellaneous	Strategic Energy Management	per Facility	New	1,492.10	3	\$1,403.08	0%	5%	\$0.01	3	3	BEST Simulation
Petroleum Refining	Miscellaneous	Transformer - High Efficiency	per Facility	New	139.51	32	\$23,486.71	15%	52%	\$0.40	2	2	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	57,654.02	10	\$1,755.07	15%	75%	\$0.00	2,577	2,577	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	64,933.67	15	\$11,306.26	15%	50%	\$0.02	1,661	1,725	OH - TRM
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	14,206.19	15	\$4,926.53	15%	38%	\$0.04	227	248	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	1,673.00	5	\$302.68	15%	50%	\$0.04	42	46	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	27,539.18	20	\$21,168.58	15%	50%	\$0.07	670	763	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	14,402.31	15	\$4,963.71	15%	38%	\$0.04	231	251	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	30,414.23	10	\$11,017.68	15%	50%	\$0.05	755	828	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$85.57	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	Existing	23,985.58	15	\$11,674.94	8%	38%	\$0.05	503	567	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	Existing	13,693.10	3	\$1,245.33	8%	38%	\$0.03	293	317	AEG study for State of New Mexico

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Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	39,284.24	15	\$18,679.90	8%	38%	\$0.05	830	922	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$22.82	15%	50%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	74,062.79	10	\$9,641.15	8%	38%	\$0.02	1,639	1,655	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	Existing	24,937.93	15	\$2,812.00	8%	38%	\$0.01	557	557	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	Existing	12,637.78	3	\$799.86	8%	38%	\$0.02	269	282	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	37,713.55	10	\$7,198.73	8%	38%	\$0.03	799	843	6th Plan
Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	3,614.43	8	\$5,598.32	10%	50%	\$0.25	514	548	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	2,564.48	8	\$1,984.81	5%	25%	\$0.13	182	195	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$35.88	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$7,573.41	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$28.89	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	65,324.55	17	\$5,049.67	5%	6%	\$0.01	243	243	E3T Website
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	10,121.98	10	\$2,372.37	15%	36%	\$0.03	770	805	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	Existing	64,587.06	17	\$12,126.35	25%	44%	\$0.02	4,529	4,571	RSMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$10,148.93	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$4,906.13	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	61,434.48	10	\$11,787.18	8%	38%	\$0.03	1,346	1,373	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	Existing	62,055.39	15	\$14,370.93	8%	38%	\$0.03	1,373	1,387	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	Existing	32,349.02	3	\$4,087.73	8%	38%	\$0.05	702	723	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	100,554.83	12	\$39,919.24	8%	38%	\$0.05	2,171	2,247	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	Existing	24,747.36	3	\$7,848.74	5%	39%	\$0.09	3,014	3,134	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	Existing	22,685.52	3	\$1,565.96	0%	5%	\$0.01	421	425	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$2,846.85	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	Existing	7,447.24	10	\$7,396.78	15%	24%	\$0.05	250	260	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$3,800.31	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Commissioning	per Facility	New	24,498.19	3	\$7,848.74	5%	39%	\$0.09	945	945	Energy Management Program Design for PC
Petroleum Refining	Motors	Compressed Air - Air Usage Reduction	per Facility	New	57,654.02	10	\$1,755.07	15%	75%	\$0.00	788	788	MI - TRM
Petroleum Refining	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	64,249.29	15	\$11,306.26	15%	50%	\$0.02	510	510	OH - TRM
Petroleum Refining	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	14,334.70	15	\$4,926.53	15%	38%	\$0.04	73	73	MI - TRM
Petroleum Refining	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	1,678.73	5	\$302.68	15%	50%	\$0.04	13	13	MI - TRM
Petroleum Refining	Motors	Compressed Air - Outside Air Intake	per Facility	New	27,727.13	20	\$21,168.58	15%	50%	\$0.07	219	219	MI - TRM
Petroleum Refining	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	14,358.79	15	\$4,963.71	15%	38%	\$0.04	73	73	MI - TRM
Petroleum Refining	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	30,520.16	10	\$11,017.68	15%	50%	\$0.05	241	241	VT - TRM
Petroleum Refining	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$85.57	15%	30%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Compressed Air - System Controls	per Facility	New	24,119.50	15	\$11,674.94	8%	38%	\$0.05	163	163	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Maintenance	per Facility	New	13,724.38	3	\$1,245.33	8%	38%	\$0.03	93	93	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	39,460.78	15	\$18,679.90	8%	38%	\$0.05	267	267	AEG study for State of New Mexico
Petroleum Refining	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$22.82	15%	50%	\$10.00	0	0	VT - TRM
Petroleum Refining	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	72,707.80	10	\$9,641.15	8%	38%	\$0.02	496	496	6th Plan
Petroleum Refining	Motors	Fan System - Controls	per Facility	New	24,577.10	15	\$2,812.00	8%	38%	\$0.01	168	168	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Maintenance	per Facility	New	12,387.94	3	\$799.86	8%	38%	\$0.02	84	84	Scaled from Optimization
Petroleum Refining	Motors	Fan System - Optimization - Optimized System	per Facility	New	36,889.51	10	\$7,198.73	8%	38%	\$0.03	251	251	6th Plan

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Petroleum Refining	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	3,567.18	8	\$5,598.32	10%	50%	\$0.25	162	162	Developed from RTF
Petroleum Refining	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	2,531.02	8	\$1,984.81	5%	25%	\$0.13	57	57	Developed from RTF
Petroleum Refining	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$35.88	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$7,573.41	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$28.89	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	65,387.10	17	\$5,049.67	5%	6%	\$0.01	74	74	E3T Website
Petroleum Refining	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	10,036.00	10	\$2,372.37	15%	36%	\$0.03	239	239	6th Plan
Petroleum Refining	Motors	Motors - Variable Frequency Drive	per Facility	New	65,336.65	17	\$7,275.82	25%	44%	\$0.01	1,413	1,413	RSMeans 2013
Petroleum Refining	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$10,148.93	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$4,906.13	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	60,954.42	10	\$11,787.18	8%	38%	\$0.03	416	416	6th Plan
Petroleum Refining	Motors	Pumping System - Controls	per Facility	New	61,812.47	15	\$14,370.93	8%	38%	\$0.03	422	422	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Maintenance	per Facility	New	31,975.13	3	\$4,087.73	8%	38%	\$0.05	218	218	Scaled from Optimization
Petroleum Refining	Motors	Pumping System - Optimization - Optimized System	per Facility	New	99,183.72	12	\$39,919.24	8%	38%	\$0.05	676	676	6th Plan
Petroleum Refining	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Motors	Strategic Energy Management	per Facility	New	22,697.88	3	\$1,403.08	0%	5%	\$0.01	129	129	BEST Simulation
Petroleum Refining	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$2,846.85	15%	25%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Motors	Transformer - High Efficiency	per Facility	New	1,982.98	32	\$23,486.71	15%	52%	\$0.40	84	84	6th Plan
Petroleum Refining	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$3,800.31	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$3,662.94	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$8.42	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$39.62	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$47.27	0%	0%	\$10.00	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Petroleum Refining	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$524.25	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$30.28	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$1,460.79	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$162.19	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$1,484.65	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$101.14	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$2.00	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	Existing	0.00	10	\$11.73	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$401.94	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$3,574.81	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$61.15	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$5,493.10	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$26,856.34	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	Existing	245.20	5	\$66.37	15%	75%	\$0.07	11	11	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	2,445.45	10	\$1,327.24	15%	75%	\$0.08	109	109	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	Existing	1,860.76	5	\$2,602.11	15%	75%	\$0.33	408	416	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	4,648.36	15	\$2,285.19	15%	50%	\$0.06	120	123	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	Existing	9,168.88	18	\$5,484.46	15%	50%	\$0.06	235	243	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	Existing	3,218.62	3	\$304.69	15%	50%	\$0.04	84	84	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	9,560.82	15	\$4,570.38	15%	50%	\$0.06	248	250	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	Existing	936.77	3	\$7,848.74	5%	39%	\$0.09	588	119	Energy Management Program Design for PC

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Petroleum Refining	Process	Strategic Energy Management	per Facility	Existing	2,784.15	3	\$1,565.96	0%	5%	\$0.01	52	52	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	Existing	959.83	10	\$7,396.78	15%	24%	\$0.05	33	34	6th Plan
Petroleum Refining	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$3,662.94	0%	0%	\$10.00	0	0	PA - TRM
Petroleum Refining	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$8.42	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$39.62	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$47.27	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Commissioning	per Facility	New	938.62	3	\$7,848.74	5%	39%	\$0.09	181	81	Energy Management Program Design for PC
Petroleum Refining	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$524.25	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$30.28	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$1,460.79	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$162.19	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$1,484.65	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$101.14	0%	0%	\$10.00	0	0	MT - IRP 2013
Petroleum Refining	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$2.00	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Lamps	per Facility	New	0.00	10	\$11.73	0%	0%	\$10.00	0	0	OPA - TRM
Petroleum Refining	Process	Heat Reclaimers	per Facility	New	0.00	10	\$401.94	0%	0%	\$10.00	0	0	VT - TRM
Petroleum Refining	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$3,574.81	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$61.15	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$5,493.10	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$26,856.34	0%	0%	\$10.00	0	0	6th Plan
Petroleum Refining	Process	Process - Conductivity Controls	per Facility	New	245.46	5	\$66.37	15%	75%	\$0.07	3	3	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	2,445.47	10	\$1,327.24	15%	75%	\$0.08	33	33	AEG study for State of New Mexico
Petroleum Refining	Process	Process - Timers and Controls	per Facility	New	1,854.88	5	\$2,602.11	15%	75%	\$0.33	126	126	AEG study for State of New Mexico

Measure Data and Assumptions

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Petroleum Refining	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	4,788.17	15	\$2,285.19	15%	50%	\$0.06	38	38	Developed from RTF
Petroleum Refining	Process	Refrigeration - System Controls	per Facility	New	9,207.37	18	\$5,484.46	15%	50%	\$0.06	73	73	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Maintenance	per Facility	New	3,219.94	3	\$304.69	15%	50%	\$0.04	26	26	AEG study for State of New Mexico
Petroleum Refining	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	9,452.21	15	\$4,570.38	15%	50%	\$0.06	75	75	AEG study for State of New Mexico
Petroleum Refining	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Petroleum Refining	Process	Strategic Energy Management	per Facility	New	2,784.15	3	\$1,403.08	0%	5%	\$0.01	16	16	BEST Simulation
Petroleum Refining	Process	Transformer - High Efficiency	per Facility	New	250.69	32	\$23,486.71	15%	52%	\$0.40	11	11	6th Plan
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$27,256.67	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	Existing	577.20	3	\$1,565.96	0%	5%	\$0.01	2	2	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	Existing	199.19	10	\$7,396.78	15%	24%	\$0.05	1	1	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	211.42	15	\$45.35	15%	35%	\$0.02	3	3	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,573.14	20	\$7,123.72	100%	at stock turnover	\$0.11	56	56	BEST Simulation
Petroleum Refining	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$18,013.00	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Petroleum Refining	Ventilation	Strategic Energy Management	per Facility	New	207.34	3	\$1,403.08	0%	5%	\$0.01	0	0	BEST Simulation
Petroleum Refining	Ventilation	Transformer - High Efficiency	per Facility	New	19.55	32	\$23,486.71	15%	52%	\$0.40	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	75.98	15	\$21.05	15%	35%	\$0.03	0	0	6th Plan
Petroleum Refining	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,670.05	20	\$4,433.06	100%	at stock turnover	\$0.13	9	9	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	27,838.05	23	\$71,553.25	2%	at stock turnover	\$0.17	36	35	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	15,940.33	23	\$8,821.74	6%	at stock turnover	\$0.06	45	46	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	9,255.75	10	\$2,568.47	15%	45%	\$0.04	13	14	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,093.95	15	\$1,383.30	15%	60%	\$0.07	4	5	BEST Simulation

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Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	389.71	15	\$346.67	15%	75%	\$0.09	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	14,889.90	15	\$7,717.16	15%	50%	\$0.06	61	68	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	Existing	11,779.31	12	\$22,268.84	15%	50%	\$0.22	46	58	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	Existing	3,486.63	15	\$47,237.24	20%	50%	\$0.17	12	14	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	26,867.39	23	\$64,452.06	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	Existing	10,862.97	18	\$16,064.95	15%	75%	\$0.10	11	14	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	775.67	18	\$1,703.35	15%	25%	\$0.07	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	Existing	4,736.21	10	\$10,638.66	18%	30%	\$0.10	10	4	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	7,125.20	45	\$207,508.44	15%	25%	\$0.16	8	9	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,224.54	20	\$3,236.68	15%	25%	\$0.07	3	3	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-144.90	45	\$28,843.58	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	Existing	21,806.15	23	\$73,415.23	4%	at stock turnover	\$0.35	11	11	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$16.38	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	Existing	1,117.42	10	\$4,617.88	15%	24%	\$0.05	1	1	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	25,445.61	23	\$13,347.67	3%	at stock turnover	\$0.05	37	37	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	7,175.75	10	\$2,070.18	15%	45%	\$0.04	5	6	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	10,722.21	4	\$1,396.54	15%	50%	\$0.03	8	10	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,865.03	15	\$1,956.59	15%	60%	\$0.07	3	3	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	372.89	15	\$344.10	15%	75%	\$0.09	0	1	BEST Simulation
Stone Clay Glass Products	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	21,077.33	23	\$53,620.96	2%	at stock turnover	\$0.15	16	15	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	9,728.67	23	\$16,013.20	6%	at stock turnover	\$0.17	17	17	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,514.01	10	\$2,005.63	15%	45%	\$0.04	3	3	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,355.37	15	\$967.00	15%	60%	\$0.07	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$251.07	15%	75%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	7,959.69	15	\$7,717.16	15%	50%	\$0.10	11	11	BEST Simulation
Stone Clay Glass Products	Cooling	Destratification Fans (HVLS)	per Facility	New	6,270.70	12	\$14,716.72	15%	50%	\$0.25	8	9	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Cooling	Energy Management System	per Facility	New	1,861.37	15	\$39,169.90	20%	50%	\$0.16	2	2	BEST Simulation
Stone Clay Glass Products	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	20,426.46	23	\$48,299.43	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Heat Pump - Maintenance	per Facility	New	7,006.40	18	\$11,801.63	15%	75%	\$0.11	2	3	AEG research & analysis
Stone Clay Glass Products	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	680.46	18	\$611.11	15%	25%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	HVAC - Economizer	per Facility	New	2,417.27	10	\$6,280.66	18%	30%	\$0.11	2	1	DEER
Stone Clay Glass Products	Cooling	Insulation - Ceiling - R-38	per Facility	New	443.09	45	\$165,928.02	15%	25%	\$0.14	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Ducting - R-8	per Facility	New	1,581.39	20	\$1,748.90	15%	25%	\$0.09	1	1	BEST Simulation
Stone Clay Glass Products	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-57.89	45	\$3,437.03	45%	50%	\$0.06	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	RTU - EER 12.0	per Facility	New	12,891.40	23	\$42,880.86	4%	at stock turnover	\$0.35	4	4	BEST Simulation
Stone Clay Glass Products	Cooling	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$43.94	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Cooling	Transformer - High Efficiency	per Facility	New	145.74	32	\$14,245.58	15%	52%	\$0.37	0	0	6th Plan
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	15,586.73	23	\$9,972.15	3%	at stock turnover	\$0.07	14	14	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,658.63	10	\$1,266.13	15%	45%	\$0.04	1	1	DEER
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	5,512.30	4	\$862.37	15%	50%	\$0.04	1	1	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,564.60	15	\$1,240.98	15%	60%	\$0.07	0	1	BEST Simulation
Stone Clay Glass Products	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$388.66	15%	75%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	Existing	124.79	15	\$47,237.24	20%	50%	\$0.17	6	10	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	411.29	5	\$76.80	15%	25%	\$0.03	7	13	Illinois TRM
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.49	10	\$179.91	33%	60%	\$0.11	7	15	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,172.76	10	\$1,228.73	15%	30%	\$0.06	53	105	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	281	285	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	142	144	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	199	397	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	22	62	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.76	10	\$4,617.88	15%	24%	\$0.05	1	1	6th Plan
Stone Clay Glass Products	Exterior Lighting	Energy Management System	per Facility	New	108.88	15	\$39,169.90	20%	50%	\$0.16	2	3	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.54	5	\$76.44	15%	25%	\$0.03	2	3	Illinois TRM
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.51	10	\$110.23	44%	60%	\$0.06	1	2	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,889.69	10	\$1,222.92	15%	30%	\$0.06	15	22	AEG research & analysis
Stone Clay Glass Products	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	123	137	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	62	69	AEO 2013
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	88	169	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	4	11	EIA 2011/Developed from RTF
Stone Clay Glass Products	Exterior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.85	32	\$14,245.58	15%	52%	\$0.37	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	7,516.92	23	\$54,651.28	2%	at stock turnover	\$0.17	10	9	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,268.84	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	Existing	26,592.17	15	\$47,237.24	20%	50%	\$0.17	87	88	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,560.19	23	\$41,839.34	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	Existing	4,688.49	18	\$16,064.95	15%	75%	\$0.10	6	6	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,911.73	18	\$1,703.35	15%	25%	\$0.07	2	2	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	Existing	107,324.70	45	\$207,508.44	15%	25%	\$0.16	118	118	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,037.79	20	\$3,236.68	15%	25%	\$0.07	2	2	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	40,355.65	45	\$28,843.58	45%	50%	\$0.06	22	22	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$16.38	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	Existing	8,076.19	10	\$4,617.88	15%	24%	\$0.05	8	8	6th Plan
Stone Clay Glass Products	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	12,401.63	23	\$47,553.25	2%	at stock turnover	\$0.15	9	9	BEST Simulation
Stone Clay Glass Products	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,716.72	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Heating	Energy Management System	per Facility	New	24,958.01	15	\$39,169.90	20%	50%	\$0.16	25	25	BEST Simulation
Stone Clay Glass Products	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	8,721.94	23	\$31,353.80	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Heat Pump - Maintenance	per Facility	New	3,033.34	18	\$11,801.63	15%	75%	\$0.11	1	1	AEG research & analysis
Stone Clay Glass Products	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-40.32	18	\$611.11	15%	25%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ceiling - R-38	per Facility	New	101,080.21	45	\$165,928.02	15%	25%	\$0.14	34	34	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Ducting - R-8	per Facility	New	198.20	20	\$1,748.90	15%	25%	\$0.09	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Insulation - Wall Cavity - R-23	per Facility	New	5,376.01	45	\$3,437.03	45%	50%	\$0.06	1	1	BEST Simulation
Stone Clay Glass Products	Heating	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$43.94	10%	10%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Heating	Transformer - High Efficiency	per Facility	New	2,027.62	32	\$14,245.58	15%	52%	\$0.37	3	3	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	Existing	675.33	15	\$47,237.24	20%	50%	\$0.17	33	53	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	2,159	2,190	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,470.70	5	\$520.90	5%	40%	\$0.03	46	95	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,192.95	5	\$694.53	15%	50%	\$0.03	58	124	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,214.37	12	\$4,669.80	3%	25%	\$0.10	151	298	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	724.21	16	\$85.98	1%	3%	\$0.01	3	5	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,824.84	10	\$1,024.18	7%	60%	\$0.02	324	582	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$1,206.42	15%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,451.39	8	\$403.59	7%	15%	\$0.03	21	40	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	278.00	5	\$21.78	10%	25%	\$0.01	2	5	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	1,098	1,169	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	224	447	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	25	70	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.83	10	\$4,617.88	15%	24%	\$0.05	3	5	6th Plan
Stone Clay Glass Products	Interior Lighting	Energy Management System	per Facility	New	632.42	15	\$39,169.90	20%	50%	\$0.16	10	15	BEST Simulation
Stone Clay Glass Products	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	946	1,053	AEO 2013
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,962.06	5	\$520.39	5%	40%	\$0.04	13	18	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,731.09	5	\$693.85	15%	50%	\$0.04	18	25	Illinois TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,939.74	12	\$4,389.87	4%	25%	\$0.09	44	63	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	653.81	16	\$85.64	1%	3%	\$0.01	1	1	Ameren Missouri TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,354.64	10	\$1,052.84	22%	60%	\$0.02	53	78	Ameren Missouri TRM
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$1,206.42	18%	30%	\$10.00	0	0	DEER
Stone Clay Glass Products	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,352.85	8	\$392.88	7%	15%	\$0.03	6	9	CA - DEER
Stone Clay Glass Products	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	196.00	5	\$21.64	10%	25%	\$0.01	0	1	AEG research & analysis
Stone Clay Glass Products	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	483	531	AEO 2013
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	99	190	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	4	13	EIA 2011/Developed from RTF
Stone Clay Glass Products	Interior Lighting	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.39	32	\$14,245.58	15%	52%	\$0.37	1	1	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$4.90	0%	0%	\$10.00	0	0	MI - TRM
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	Existing	2,419.15	3	\$2,949.55	10%	40%	\$0.07	122	122	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	726.20	10	\$4,617.88	15%	24%	\$0.05	11	11	6th Plan
Stone Clay Glass Products	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$4.90	0%	0%	\$10.00	0	0	MI - TRM
Stone Clay Glass Products	Miscellaneous	Commissioning	per Facility	New	2,420.67	3	\$2,949.55	10%	40%	\$0.07	35	35	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Miscellaneous	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Miscellaneous	Transformer - High Efficiency	per Facility	New	196.66	32	\$14,245.58	15%	52%	\$0.37	3	3	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,766.29	10	\$114.65	15%	75%	\$0.00	196	196	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	4,249.26	15	\$738.59	15%	50%	\$0.02	126	131	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	935.42	15	\$321.83	15%	38%	\$0.04	17	19	MI - TRM

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Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	109.48	5	\$19.77	15%	50%	\$0.04	3	3	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,839.62	20	\$1,382.85	15%	50%	\$0.07	52	59	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	936.71	15	\$324.26	15%	38%	\$0.04	17	19	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	Existing	1,639.35	15	\$762.67	8%	38%	\$0.05	41	44	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	Existing	896.07	3	\$81.35	8%	38%	\$0.03	22	24	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,584.97	15	\$1,220.28	8%	38%	\$0.05	64	70	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	31,053.37	10	\$4,035.32	8%	38%	\$0.02	800	807	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	Existing	10,456.09	15	\$1,176.97	8%	38%	\$0.01	272	272	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	Existing	5,298.81	3	\$334.79	8%	38%	\$0.02	131	138	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	15,812.64	10	\$3,013.04	8%	38%	\$0.03	390	411	6th Plan
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	1,200.93	8	\$1,802.75	10%	50%	\$0.25	201	211	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	852.07	8	\$639.14	5%	25%	\$0.13	71	75	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$30.85	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$377.56	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.44	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	21,218.63	17	\$1,626.08	5%	6%	\$0.01	92	92	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	3,311.84	10	\$763.94	15%	36%	\$0.03	295	305	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	Existing	21,043.96	17	\$3,904.88	25%	44%	\$0.02	1,720	1,733	RSMeans 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$505.96	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$244.59	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	7,277.80	10	\$1,393.92	8%	38%	\$0.03	186	189	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	Existing	7,351.36	15	\$1,699.47	8%	38%	\$0.03	189	191	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	Existing	3,832.21	3	\$483.40	8%	38%	\$0.05	97	100	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	11,904.77	12	\$4,720.75	8%	38%	\$0.05	299	310	6th Plan
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	Existing	8,215.62	3	\$2,949.55	10%	40%	\$0.07	1,040	1,068	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$141.93	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	Existing	2,474.63	10	\$4,617.88	15%	24%	\$0.05	98	101	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$2,428.38	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Commissioning	per Facility	New	8,141.81	3	\$2,949.55	10%	40%	\$0.07	323	323	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Compressed Air - Air Usage Reduction	per Facility	New	3,766.29	10	\$114.65	15%	75%	\$0.00	60	60	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	4,202.74	15	\$738.59	15%	50%	\$0.02	39	39	OH - TRM
Stone Clay Glass Products	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	932.17	15	\$321.83	15%	38%	\$0.04	6	6	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	109.81	5	\$19.77	15%	50%	\$0.04	1	1	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Outside Air Intake	per Facility	New	1,849.73	20	\$1,382.85	15%	50%	\$0.07	17	17	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	944.75	15	\$324.26	15%	38%	\$0.04	6	6	MI - TRM
Stone Clay Glass Products	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$0.00	15%	30%	\$10.00	0	0	VT - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Compressed Air - System Controls	per Facility	New	1,645.39	15	\$762.67	8%	38%	\$0.05	13	13	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Maintenance	per Facility	New	897.75	3	\$81.35	8%	38%	\$0.03	7	7	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	2,596.32	15	\$1,220.28	8%	38%	\$0.05	20	20	AEG study for State of New Mexico
Stone Clay Glass Products	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$0.00	15%	50%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	30,472.64	10	\$4,035.32	8%	38%	\$0.02	242	242	6th Plan
Stone Clay Glass Products	Motors	Fan System - Controls	per Facility	New	10,300.55	15	\$1,176.97	8%	38%	\$0.01	82	82	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Maintenance	per Facility	New	5,191.91	3	\$334.79	8%	38%	\$0.02	41	41	Scaled from Optimization
Stone Clay Glass Products	Motors	Fan System - Optimization - Optimized System	per Facility	New	15,460.74	10	\$3,013.04	8%	38%	\$0.03	122	122	6th Plan
Stone Clay Glass Products	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	1,186.98	8	\$1,802.75	10%	50%	\$0.25	63	63	Developed from RTF
Stone Clay Glass Products	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	842.20	8	\$639.14	5%	25%	\$0.13	22	22	Developed from RTF
Stone Clay Glass Products	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$30.85	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$377.56	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.44	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	21,220.96	17	\$1,626.08	5%	6%	\$0.01	28	28	E3T Website
Stone Clay Glass Products	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	3,282.53	10	\$763.94	15%	36%	\$0.03	91	91	6th Plan
Stone Clay Glass Products	Motors	Motors - Variable Frequency Drive	per Facility	New	21,204.58	17	\$2,342.93	25%	44%	\$0.01	534	534	RSMeans 2013
Stone Clay Glass Products	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$505.96	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$244.59	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	7,217.95	10	\$1,393.92	8%	38%	\$0.03	57	57	6th Plan
Stone Clay Glass Products	Motors	Pumping System - Controls	per Facility	New	7,319.57	15	\$1,699.47	8%	38%	\$0.03	58	58	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Maintenance	per Facility	New	3,786.35	3	\$483.40	8%	38%	\$0.05	30	30	Scaled from Optimization
Stone Clay Glass Products	Motors	Pumping System - Optimization - Optimized System	per Facility	New	11,744.88	12	\$4,720.75	8%	38%	\$0.05	93	93	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Motors	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$141.93	15%	25%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Motors	Transformer - High Efficiency	per Facility	New	659.83	32	\$14,245.58	15%	52%	\$0.37	32	32	6th Plan
Stone Clay Glass Products	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$2,428.38	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$433.17	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$13.58	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$63.93	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$76.27	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$450.69	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$48.86	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$2,357.01	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$261.70	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$2,395.50	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$232.65	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$1.72	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Lamps	per Facility	Existing	0.00	10	\$10.08	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$345.55	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$4,548.14	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$77.81	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$12,635.46	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$34,168.59	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	Existing	619.96	5	\$167.50	15%	75%	\$0.07	32	32	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	6,141.68	10	\$3,349.90	15%	75%	\$0.08	316	319	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	Existing	2,413.67	5	\$3,310.59	15%	75%	\$0.33	620	628	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	1,108.71	15	\$529.08	15%	50%	\$0.06	34	34	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	Existing	2,126.52	18	\$1,269.78	15%	50%	\$0.06	63	65	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	Existing	746.49	3	\$70.54	15%	50%	\$0.04	23	23	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	2,186.80	15	\$1,058.15	15%	50%	\$0.06	66	67	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	Existing	885.52	3	\$2,949.55	10%	40%	\$0.07	574	115	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	Existing	1,225.63	10	\$4,617.88	15%	24%	\$0.05	50	50	6th Plan
Stone Clay Glass Products	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$433.17	0%	0%	\$10.00	0	0	PA - TRM
Stone Clay Glass Products	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$13.58	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$63.93	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$76.27	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Commissioning	per Facility	New	886.28	3	\$2,949.55	10%	40%	\$0.07	176	78	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$450.69	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$48.86	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$2,357.01	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$261.70	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$2,395.50	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$232.65	0%	0%	\$10.00	0	0	MT - IRP 2013
Stone Clay Glass Products	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$1.72	0%	0%	\$10.00	0	0	OPA - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Process	Heat Lamps	per Facility	New	0.00	10	\$10.08	0%	0%	\$10.00	0	0	OPA - TRM
Stone Clay Glass Products	Process	Heat Reclaimers	per Facility	New	0.00	10	\$345.55	0%	0%	\$10.00	0	0	VT - TRM
Stone Clay Glass Products	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$4,548.14	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$77.81	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$12,635.46	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$34,168.59	0%	0%	\$10.00	0	0	6th Plan
Stone Clay Glass Products	Process	Process - Conductivity Controls	per Facility	New	620.35	5	\$167.50	15%	75%	\$0.07	10	10	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	6,123.30	10	\$3,349.90	15%	75%	\$0.08	97	97	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Process - Timers and Controls	per Facility	New	2,404.68	5	\$3,310.59	15%	75%	\$0.33	191	191	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	1,110.05	15	\$529.08	15%	50%	\$0.06	10	10	Developed from RTF
Stone Clay Glass Products	Process	Refrigeration - System Controls	per Facility	New	2,134.56	18	\$1,269.78	15%	50%	\$0.06	20	20	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Maintenance	per Facility	New	746.49	3	\$70.54	15%	50%	\$0.04	7	7	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	2,191.33	15	\$1,058.15	15%	50%	\$0.06	20	20	AEG study for State of New Mexico
Stone Clay Glass Products	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Stone Clay Glass Products	Process	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Process	Transformer - High Efficiency	per Facility	New	324.99	32	\$14,245.58	15%	52%	\$0.37	16	16	6th Plan
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$22,268.84	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	Existing	163.02	10	\$4,617.88	15%	24%	\$0.05	1	1	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	173.03	15	\$37.05	15%	35%	\$0.02	3	3	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	5,370.29	20	\$5,820.11	100%	at stock turnover	\$0.11	53	54	BEST Simulation
Stone Clay Glass Products	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$14,716.72	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Stone Clay Glass Products	Ventilation	Strategic Energy Management	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	BEST Simulation
Stone Clay Glass Products	Ventilation	Transformer - High Efficiency	per Facility	New	16.00	32	\$14,245.58	15%	52%	\$0.37	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	62.16	15	\$17.20	15%	35%	\$0.03	0	0	6th Plan
Stone Clay Glass Products	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,998.45	20	\$3,621.83	100%	at stock turnover	\$0.13	8	8	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	31,411.94	23	\$80,739.35	2%	at stock turnover	\$0.17	3	3	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	17,986.77	23	\$9,954.28	6%	at stock turnover	\$0.06	4	4	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	10,425.80	10	\$2,898.27	15%	45%	\$0.04	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,432.57	15	\$1,560.90	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	452.70	15	\$391.23	15%	75%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	15,478.01	15	\$98,913.71	15%	50%	\$0.64	5	6	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	Existing	13,676.75	12	\$25,127.70	15%	50%	\$0.22	4	5	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	Existing	4,048.52	15	\$53,099.61	20%	50%	\$0.17	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	30,316.67	23	\$72,726.51	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	Existing	12,613.86	18	\$18,127.43	15%	75%	\$0.10	1	1	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	900.90	18	\$1,922.08	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	Existing	5,500.68	10	\$12,004.41	18%	30%	\$0.10	1	0	DEER

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	8,273.84	45	\$234,148.66	15%	25%	\$0.16	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,583.57	20	\$3,652.19	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-168.30	45	\$32,546.61	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	Existing	24,605.65	23	\$82,840.38	4%	at stock turnover	\$0.35	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	Existing	3,710.52	3	\$822.19	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$209.95	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	Existing	1,258.68	10	\$3,819.27	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	28,712.35	23	\$15,061.26	3%	at stock turnover	\$0.05	3	3	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,082.91	10	\$2,335.94	15%	45%	\$0.04	0	1	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	12,077.68	4	\$1,575.86	15%	50%	\$0.03	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	3,326.00	15	\$2,207.83	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	432.85	15	\$388.34	15%	75%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	23,783.26	23	\$60,504.89	2%	at stock turnover	\$0.15	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	1,266.42	23	\$102,623.59	6%	at stock turnover	\$8.43	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	8,251.84	10	\$2,262.77	15%	45%	\$0.04	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,716.75	15	\$1,091.09	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$3,218.09	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	8,748.65	15	\$98,913.71	15%	50%	\$1.11	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Destratification Fans (HVLS)	per Facility	New	7,725.11	12	\$16,606.01	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Cooling	Energy Management System	per Facility	New	2,293.19	15	\$43,997.37	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	23,048.84	23	\$54,500.18	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Heat Pump - Maintenance	per Facility	New	8,248.82	18	\$13,316.77	15%	75%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	800.18	18	\$689.55	15%	25%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	HVAC - Economizer	per Facility	New	3,009.03	10	\$7,087.01	18%	30%	\$0.11	0	0	DEER
Transportation Equipment Mfg	Cooling	Insulation - Ceiling - R-38	per Facility	New	545.88	45	\$187,230.15	15%	25%	\$0.14	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Ducting - R-8	per Facility	New	1,866.11	20	\$1,973.37	15%	25%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-68.25	45	\$3,878.23	45%	50%	\$0.06	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	RTU - EER 12.0	per Facility	New	14,546.42	23	\$48,385.97	4%	at stock turnover	\$0.35	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Strategic Energy Management	per Facility	New	2,096.24	3	\$671.95	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$563.21	10%	10%	\$10.00	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Cooling	Transformer - High Efficiency	per Facility	New	179.51	32	\$11,248.98	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	17,587.77	23	\$11,252.39	3%	at stock turnover	\$0.07	1	1	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	4,122.86	10	\$1,428.64	15%	45%	\$0.04	0	0	DEER
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	6,211.73	4	\$973.05	15%	50%	\$0.04	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,763.14	15	\$1,400.36	15%	60%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$4,981.64	15%	75%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	Existing	124.58	15	\$53,099.61	20%	50%	\$0.17	0	1	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	410.59	5	\$76.81	15%	25%	\$0.03	1	1	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.21	10	\$179.90	33%	60%	\$0.11	1	1	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,169.05	10	\$1,228.75	15%	30%	\$0.06	4	8	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	22	22	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	11	11	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	16	31	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	2	5	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$822.19	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.69	10	\$3,819.27	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Exterior Lighting	Energy Management System	per Facility	New	108.74	15	\$43,997.37	20%	50%	\$0.16	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.08	5	\$76.44	15%	25%	\$0.03	0	0	Illinois TRM
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.32	10	\$110.25	44%	60%	\$0.06	0	0	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,887.22	10	\$1,222.97	15%	30%	\$0.06	1	2	AEG research & analysis
Transportation Equipment Mfg	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	10	11	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	5	5	AEO 2013
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	7	13	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$671.95	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.84	32	\$11,248.98	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	8,481.95	23	\$61,667.49	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Transportation Equipment Mfg	Heating	De-stratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,127.70	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	Existing	29,953.65	15	\$53,099.61	20%	50%	\$0.17	8	8	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,888.87	23	\$47,210.73	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	Existing	5,281.16	18	\$18,127.43	15%	75%	\$0.10	0	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	2,153.39	18	\$1,922.08	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	Existing	120,891.39	45	\$234,148.66	15%	25%	\$0.16	10	10	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	Existing	2,295.38	20	\$3,652.19	15%	25%	\$0.07	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	45,456.92	45	\$32,546.61	45%	50%	\$0.06	2	2	BEST Simulation
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	Existing	26,326.52	3	\$822.19	0%	5%	\$0.01	1	1	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$209.95	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	Existing	9,097.09	10	\$3,819.27	15%	24%	\$0.04	1	1	6th Plan
Transportation Equipment Mfg	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	13,993.77	23	\$53,658.21	2%	at stock turnover	\$0.15	1	1	BEST Simulation
Transportation Equipment Mfg	Heating	De-stratification Fans (HVLS)	per Facility	New	0.00	12	\$16,606.01	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Heating	Energy Management System	per Facility	New	28,124.50	15	\$43,997.37	20%	50%	\$0.16	2	2	BEST Simulation
Transportation Equipment Mfg	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	9,841.67	23	\$35,379.04	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Heat Pump - Maintenance	per Facility	New	3,418.19	18	\$13,316.77	15%	75%	\$0.11	0	0	AEG research & analysis
Transportation Equipment Mfg	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-45.43	18	\$689.55	15%	25%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ceiling - R-38	per Facility	New	113,904.45	45	\$187,230.15	15%	25%	\$0.14	3	3	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Ducting - R-8	per Facility	New	223.35	20	\$1,973.37	15%	25%	\$0.09	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Insulation - Wall Cavity - R-23	per Facility	New	6,058.07	45	\$3,878.23	45%	50%	\$0.06	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Heating	Strategic Energy Management	per Facility	New	24,730.94	3	\$671.95	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$563.21	10%	10%	\$10.00	0	0	BEST Simulation
Transportation Equipment Mfg	Heating	Transformer - High Efficiency	per Facility	New	2,284.87	32	\$11,248.98	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	Existing	674.18	15	\$53,099.61	20%	50%	\$0.17	3	4	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	168	171	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,365.36	5	\$520.84	5%	40%	\$0.03	3	7	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,288.65	5	\$694.58	15%	50%	\$0.03	5	10	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,207.18	12	\$4,669.86	3%	25%	\$0.10	12	23	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	722.96	16	\$85.99	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,816.54	10	\$1,024.21	7%	60%	\$0.02	25	45	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$15,463.12	15%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,448.91	8	\$403.55	7%	15%	\$0.03	2	3	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	277.54	5	\$21.75	10%	25%	\$0.01	0	0	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	86	91	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	17	35	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	2	5	EIA 2011/Developed from RTF

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	Existing	697.71	3	\$822.19	0%	5%	\$0.01	0	1	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.47	10	\$3,819.27	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Interior Lighting	Energy Management System	per Facility	New	631.60	15	\$43,997.37	20%	50%	\$0.16	1	1	BEST Simulation
Transportation Equipment Mfg	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	74	82	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	2,045.65	5	\$520.34	5%	40%	\$0.04	1	1	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,641.39	5	\$693.83	15%	50%	\$0.04	1	2	Illinois TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,934.63	12	\$4,389.89	4%	25%	\$0.09	3	5	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	652.96	16	\$85.61	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,348.94	10	\$1,052.88	22%	60%	\$0.02	4	6	Ameren Missouri TRM
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$15,463.12	18%	30%	\$10.00	0	0	DEER
Transportation Equipment Mfg	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,351.09	8	\$392.86	7%	15%	\$0.03	0	1	CA - DEER
Transportation Equipment Mfg	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	195.75	5	\$21.62	10%	25%	\$0.01	0	0	AEG research & analysis
Transportation Equipment Mfg	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	38	41	AEO 2013
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	8	15	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Transportation Equipment Mfg	Interior Lighting	Strategic Energy Management	per Facility	New	629.60	3	\$671.95	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.33	32	\$11,248.98	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$62.86	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	Existing	1,566.32	3	\$1,037.29	5%	39%	\$0.07	7	7	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	Existing	1,360.71	3	\$822.19	0%	5%	\$0.01	1	1	BEST Simulation
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	470.19	10	\$3,819.27	15%	24%	\$0.04	1	1	6th Plan
Transportation Equipment Mfg	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$62.86	0%	0%	\$10.00	0	0	MI - TRM
Transportation Equipment Mfg	Miscellaneous	Commissioning	per Facility	New	1,567.95	3	\$1,037.29	5%	39%	\$0.07	2	2	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Miscellaneous	Strategic Energy Management	per Facility	New	1,360.71	3	\$671.95	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Miscellaneous	Transformer - High Efficiency	per Facility	New	127.22	32	\$11,248.98	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	1,108.38	10	\$33.69	15%	75%	\$0.00	4	4	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	1,235.26	15	\$217.36	15%	50%	\$0.02	3	3	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	273.11	15	\$94.66	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	32.16	5	\$5.78	15%	50%	\$0.04	0	0	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	529.43	20	\$406.94	15%	50%	\$0.07	1	1	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	276.88	15	\$95.42	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	584.35	10	\$211.83	15%	50%	\$0.05	1	1	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$942.87	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	Existing	471.73	15	\$224.40	8%	38%	\$0.05	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	Existing	263.25	3	\$23.89	8%	38%	\$0.03	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	743.88	15	\$359.17	8%	38%	\$0.05	1	2	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$251.43	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	4,926.26	10	\$641.28	8%	38%	\$0.02	10	10	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	Existing	1,658.74	15	\$187.07	8%	38%	\$0.01	3	3	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	Existing	840.60	3	\$53.18	8%	38%	\$0.02	2	2	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	2,508.50	10	\$478.85	8%	38%	\$0.03	5	5	6th Plan
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	340.17	8	\$473.83	10%	50%	\$0.23	4	4	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	241.36	8	\$167.96	5%	25%	\$0.12	1	1	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$395.38	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$464.40	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$1.76	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	5,978.60	17	\$427.44	5%	6%	\$0.01	2	2	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	937.71	10	\$200.77	15%	36%	\$0.03	5	5	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	Existing	5,947.78	17	\$1,026.47	25%	44%	\$0.02	30	31	RSMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$622.30	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$300.84	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$441.52	8%	38%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	Existing	0.00	15	\$538.32	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	Existing	0.00	3	\$153.12	8%	38%	\$10.00	0	0	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	0.00	12	\$1,495.52	8%	38%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	Existing	2,329.24	3	\$1,037.29	5%	39%	\$0.07	21	21	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	Existing	2,076.21	3	\$822.19	0%	5%	\$0.01	3	3	BEST Simulation
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$174.62	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	Existing	701.02	10	\$3,819.27	15%	24%	\$0.04	2	2	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$636.88	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Commissioning	per Facility	New	2,143.62	3	\$1,037.29	5%	39%	\$0.07	8	8	Energy Management Program Design for PC

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Compressed Air - Air Usage Reduction	per Facility	New	1,108.38	10	\$33.69	15%	75%	\$0.00	1	1	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	1,235.17	15	\$217.36	15%	50%	\$0.02	1	1	OH - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	273.96	15	\$94.66	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	32.27	5	\$5.78	15%	50%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Outside Air Intake	per Facility	New	533.05	20	\$406.94	15%	50%	\$0.07	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	277.66	15	\$95.42	15%	38%	\$0.04	0	0	MI - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	586.74	10	\$211.83	15%	50%	\$0.05	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$942.87	15%	30%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Compressed Air - System Controls	per Facility	New	474.14	15	\$224.40	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Maintenance	per Facility	New	263.85	3	\$23.89	8%	38%	\$0.03	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	748.17	15	\$359.17	8%	38%	\$0.05	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$251.43	15%	50%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	4,836.13	10	\$641.28	8%	38%	\$0.02	3	3	6th Plan
Transportation Equipment Mfg	Motors	Fan System - Controls	per Facility	New	1,634.74	15	\$187.07	8%	38%	\$0.01	1	1	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Maintenance	per Facility	New	823.98	3	\$53.18	8%	38%	\$0.02	1	1	Scaled from Optimization
Transportation Equipment Mfg	Motors	Fan System - Optimization - Optimized System	per Facility	New	2,453.69	10	\$478.85	8%	38%	\$0.03	2	2	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	312.13	8	\$473.83	10%	50%	\$0.25	1	1	Developed from RTF
Transportation Equipment Mfg	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	221.46	8	\$167.96	5%	25%	\$0.13	0	0	Developed from RTF
Transportation Equipment Mfg	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$395.38	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$464.40	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$1.76	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	5,569.51	17	\$427.44	5%	6%	\$0.01	1	1	E3T Website
Transportation Equipment Mfg	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	865.51	10	\$200.77	15%	36%	\$0.03	2	2	6th Plan
Transportation Equipment Mfg	Motors	Motors - Variable Frequency Drive	per Facility	New	5,565.21	17	\$615.88	25%	44%	\$0.01	11	11	RSMeans 2013
Transportation Equipment Mfg	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$622.30	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$300.84	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	2,283.50	10	\$441.52	8%	38%	\$0.03	1	1	6th Plan
Transportation Equipment Mfg	Motors	Pumping System - Controls	per Facility	New	2,315.65	15	\$538.32	8%	38%	\$0.03	1	1	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Maintenance	per Facility	New	1,197.87	3	\$153.12	8%	38%	\$0.05	1	1	Scaled from Optimization
Transportation Equipment Mfg	Motors	Pumping System - Optimization - Optimized System	per Facility	New	3,715.67	12	\$1,495.52	8%	38%	\$0.05	2	2	6th Plan
Transportation Equipment Mfg	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Motors	Strategic Energy Management	per Facility	New	1,933.35	3	\$671.95	0%	5%	\$0.01	1	1	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$174.62	15%	25%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Motors	Transformer - High Efficiency	per Facility	New	173.51	32	\$11,248.98	15%	52%	\$0.34	1	1	6th Plan
Transportation Equipment Mfg	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$636.88	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$137.28	0%	0%	\$10.00	0	0	PA - TRM
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$22.25	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$104.72	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$124.96	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$5,776.67	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$80.08	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$3,860.38	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$428.57	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$3,923.36	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$54.69	0%	0%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$22.00	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	Existing	0.00	10	\$129.24	0%	0%	\$10.00	0	0	OPA - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$4,428.99	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$1,455.80	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$24.89	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$2,968.79	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$10,936.70	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	Existing	192.04	5	\$51.92	15%	75%	\$0.07	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	1,900.72	10	\$1,039.42	15%	75%	\$0.08	8	8	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	Existing	765.31	5	\$1,059.66	15%	75%	\$0.33	15	16	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	935.37	15	\$447.17	15%	50%	\$0.06	2	2	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	Existing	1,794.05	18	\$1,073.12	15%	50%	\$0.06	4	4	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	Existing	629.78	3	\$59.59	15%	50%	\$0.04	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	1,844.90	15	\$894.22	15%	50%	\$0.06	4	4	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	Existing	319.08	3	\$1,037.29	5%	39%	\$0.07	18	4	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	Existing	1,133.79	3	\$822.19	0%	5%	\$0.01	2	2	BEST Simulation
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	Existing	391.34	10	\$3,819.27	15%	24%	\$0.04	1	1	6th Plan
Transportation Equipment Mfg	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$137.28	0%	0%	\$10.00	0	0	PA - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$22.25	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$104.72	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$124.96	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Commissioning	per Facility	New	401.01	3	\$1,037.29	5%	39%	\$0.07	5	2	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$5,776.67	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$80.08	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$3,860.38	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$428.57	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$3,923.36	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$54.69	0%	0%	\$10.00	0	0	MT - IRP 2013
Transportation Equipment Mfg	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$22.00	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Lamps	per Facility	New	0.00	10	\$129.24	0%	0%	\$10.00	0	0	OPA - TRM
Transportation Equipment Mfg	Process	Heat Reclaimers	per Facility	New	0.00	10	\$4,428.99	0%	0%	\$10.00	0	0	VT - TRM
Transportation Equipment Mfg	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$1,455.80	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$24.89	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$2,968.79	0%	0%	\$10.00	0	0	6th Plan

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$10,936.70	0%	0%	\$10.00	0	0	6th Plan
Transportation Equipment Mfg	Process	Process - Conductivity Controls	per Facility	New	192.24	5	\$51.92	15%	75%	\$0.07	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	1,895.15	10	\$1,039.42	15%	75%	\$0.08	2	2	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Process - Timers and Controls	per Facility	New	837.38	5	\$1,059.66	15%	75%	\$0.30	4	4	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	936.89	15	\$447.17	15%	50%	\$0.06	1	1	Developed from RTF
Transportation Equipment Mfg	Process	Refrigeration - System Controls	per Facility	New	1,801.58	18	\$1,073.12	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Maintenance	per Facility	New	630.04	3	\$59.59	15%	50%	\$0.04	0	0	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	1,849.49	15	\$894.22	15%	50%	\$0.06	1	1	AEG study for State of New Mexico
Transportation Equipment Mfg	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Transportation Equipment Mfg	Process	Strategic Energy Management	per Facility	New	1,246.37	3	\$671.95	0%	5%	\$0.01	1	1	BEST Simulation
Transportation Equipment Mfg	Process	Transformer - High Efficiency	per Facility	New	113.17	32	\$11,248.98	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$25,127.70	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	Existing	532.12	3	\$822.19	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	Existing	183.63	10	\$3,819.27	15%	24%	\$0.04	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	194.91	15	\$41.86	15%	35%	\$0.02	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	6,059.73	20	\$6,567.31	100%	at stock turnover	\$0.11	5	5	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Transportation Equipment Mfg	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$16,606.01	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Transportation Equipment Mfg	Ventilation	Strategic Energy Management	per Facility	New	191.15	3	\$671.95	0%	5%	\$0.01	0	0	BEST Simulation
Transportation Equipment Mfg	Ventilation	Transformer - High Efficiency	per Facility	New	18.03	32	\$11,248.98	15%	52%	\$0.34	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	70.04	15	\$19.36	15%	35%	\$0.03	0	0	6th Plan
Transportation Equipment Mfg	Ventilation	Ventilation - Variable Air Volume	per Facility	New	3,383.39	20	\$4,086.81	100%	at stock turnover	\$0.13	1	1	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	24,541.85	23	\$63,080.90	2%	at stock turnover	\$0.17	4	4	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	14,052.90	23	\$7,777.19	6%	at stock turnover	\$0.06	5	5	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,145.58	10	\$2,264.35	15%	45%	\$0.04	1	2	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,900.54	15	\$1,219.51	15%	60%	\$0.07	0	1	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	353.69	15	\$305.61	15%	75%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	12,092.82	15	\$60,782.39	15%	50%	\$0.50	6	7	BEST Simulation
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	Existing	10,685.52	12	\$19,632.06	15%	50%	\$0.22	5	7	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	Existing	3,163.07	15	\$41,830.38	20%	50%	\$0.17	1	2	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	23,686.13	23	\$56,820.54	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	Existing	9,855.09	18	\$14,162.73	15%	75%	\$0.10	1	2	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	703.86	18	\$1,501.64	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	Existing	4,297.63	10	\$9,378.94	18%	30%	\$0.10	1	0	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	6,464.28	45	\$182,938.16	15%	25%	\$0.16	1	1	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,018.52	20	\$2,853.40	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-131.49	45	\$25,428.33	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Cooling	RTU - EER 12.0	per Facility	Existing	19,224.16	23	\$64,722.41	4%	at stock turnover	\$0.35	1	1	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	Existing	2,899.00	3	\$1,061.07	0%	5%	\$0.01	0	0	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$161.30	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	Existing	983.40	10	\$5,005.59	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	22,432.69	23	\$11,767.22	3%	at stock turnover	\$0.05	4	4	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	6,315.10	10	\$1,825.02	15%	45%	\$0.04	1	1	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	9,436.18	4	\$1,231.18	15%	50%	\$0.03	1	1	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,598.57	15	\$1,724.90	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	338.18	15	\$303.37	15%	75%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	18,581.64	23	\$47,271.90	2%	at stock turnover	\$0.15	2	2	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - 1.23 kW/ton, COP 2.86	per Facility	New	989.44	23	\$63,062.11	6%	at stock turnover	\$6.63	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	6,447.08	10	\$1,768.16	15%	45%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,341.28	15	\$852.48	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$2,471.93	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	6,835.24	15	\$60,782.39	15%	50%	\$0.88	1	1	BEST Simulation
Wastewater	Cooling	Destratification Fans (HVLS)	per Facility	New	6,035.56	12	\$12,974.20	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Wastewater	Cooling	Energy Management System	per Facility	New	1,791.65	15	\$34,717.50	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	18,007.84	23	\$42,580.48	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Cooling	Heat Pump - Maintenance	per Facility	New	6,444.73	18	\$10,404.23	15%	75%	\$0.11	0	0	AEG research & analysis
Wastewater	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	626.70	18	\$538.76	15%	25%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	HVAC - Economizer	per Facility	New	2,350.93	10	\$5,537.01	18%	30%	\$0.11	0	0	DEER
Wastewater	Cooling	Insulation - Ceiling - R-38	per Facility	New	426.49	45	\$146,281.08	15%	25%	\$0.14	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Ducting - R-8	per Facility	New	1,456.45	20	\$1,541.81	15%	25%	\$0.09	0	0	BEST Simulation
Wastewater	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-53.33	45	\$3,030.08	45%	50%	\$0.06	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Cooling	RTU - EER 12.0	per Facility	New	11,364.98	23	\$37,803.50	4%	at stock turnover	\$0.35	0	0	BEST Simulation
Wastewater	Cooling	Strategic Energy Management	per Facility	New	1,637.77	3	\$943.87	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$432.61	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Cooling	Transformer - High Efficiency	per Facility	New	140.25	32	\$15,799.25	15%	52%	\$0.56	0	0	6th Plan
Wastewater	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	13,741.16	23	\$8,791.38	3%	at stock turnover	\$0.07	2	2	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,221.15	10	\$1,116.22	15%	45%	\$0.04	0	0	DEER
Wastewater	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	4,853.16	4	\$760.24	15%	50%	\$0.04	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,377.52	15	\$1,094.05	15%	60%	\$0.07	0	0	BEST Simulation
Wastewater	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$3,826.48	15%	75%	\$10.00	0	0	BEST Simulation
Wastewater	Exterior Lighting	Energy Management System	per Facility	Existing	124.58	15	\$41,830.38	20%	50%	\$0.17	1	1	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	410.59	5	\$76.79	15%	25%	\$0.03	1	2	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.21	10	\$179.92	33%	60%	\$0.11	1	2	AEG research & analysis
Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,169.05	10	\$1,228.70	15%	30%	\$0.06	7	13	AEG research & analysis
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	36	36	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	18	18	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	25	50	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	3	8	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$1,061.07	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.69	10	\$5,005.59	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Exterior Lighting	Energy Management System	per Facility	New	108.74	15	\$34,717.50	20%	50%	\$0.16	0	0	BEST Simulation
Wastewater	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.08	5	\$76.40	15%	25%	\$0.03	0	0	Illinois TRM
Wastewater	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.32	10	\$110.24	44%	60%	\$0.06	0	0	AEG research & analysis

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Wastewater	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,887.22	10	\$1,222.91	15%	30%	\$0.06	2	3	AEG research & analysis
Wastewater	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	16	17	AEO 2013
Wastewater	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	8	9	AEO 2013
Wastewater	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	11	21	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	0	1	EIA 2011/Developed from RTF
Wastewater	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$943.87	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.84	32	\$15,799.25	15%	52%	\$0.56	0	0	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,626.87	23	\$48,180.23	2%	at stock turnover	\$0.17	1	1	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$19,632.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	Existing	23,402.51	15	\$41,830.38	20%	50%	\$0.17	10	10	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,257.05	23	\$36,885.30	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	Existing	4,126.12	18	\$14,162.73	15%	75%	\$0.10	1	1	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,682.42	18	\$1,501.64	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	Existing	94,451.31	45	\$182,938.16	15%	25%	\$0.16	13	13	BEST Simulation
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,793.36	20	\$2,853.40	15%	25%	\$0.07	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	35,515.06	45	\$25,428.33	45%	50%	\$0.06	2	2	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	Existing	20,568.66	3	\$1,061.07	0%	5%	\$0.01	1	1	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$161.30	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Heating	Transformer - High Efficiency	per Facility	Existing	7,107.47	10	\$5,005.59	15%	24%	\$0.05	1	1	6th Plan
Wastewater	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	10,933.20	23	\$41,922.65	2%	at stock turnover	\$0.15	1	1	BEST Simulation
Wastewater	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$12,974.20	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Heating	Energy Management System	per Facility	New	21,973.41	15	\$34,717.50	20%	50%	\$0.16	3	3	BEST Simulation
Wastewater	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,689.21	23	\$27,641.31	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Wastewater	Heating	Heat Pump - Maintenance	per Facility	New	2,670.60	18	\$10,404.23	15%	75%	\$0.11	0	0	AEG research & analysis
Wastewater	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-35.50	18	\$538.76	15%	25%	\$0.09	0	0	BEST Simulation
Wastewater	Heating	Insulation - Ceiling - R-38	per Facility	New	88,992.47	45	\$146,281.08	15%	25%	\$0.14	4	4	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Heating	Insulation - Ducting - R-8	per Facility	New	174.50	20	\$1,541.81	15%	25%	\$0.09	0	0	BEST Simulation
Wastewater	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,733.12	45	\$3,030.08	45%	50%	\$0.06	0	0	BEST Simulation
Wastewater	Heating	Strategic Energy Management	per Facility	New	19,322.06	3	\$943.87	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$432.61	10%	10%	\$10.00	0	0	BEST Simulation
Wastewater	Heating	Transformer - High Efficiency	per Facility	New	1,785.14	32	\$15,799.25	15%	52%	\$0.56	0	0	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	Existing	674.18	15	\$41,830.38	20%	50%	\$0.17	4	7	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	274	278	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,466.49	5	\$520.91	5%	40%	\$0.03	6	12	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,187.52	5	\$694.50	15%	50%	\$0.03	7	16	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,207.18	12	\$4,669.77	3%	25%	\$0.10	19	38	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	722.96	16	\$85.98	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,816.54	10	\$1,024.22	7%	60%	\$0.02	41	74	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$9,502.08	15%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,448.91	8	\$403.57	7%	15%	\$0.03	3	5	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	277.54	5	\$21.79	10%	25%	\$0.01	0	1	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	139	148	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	28	57	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	3	9	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	Existing	697.71	3	\$1,061.07	0%	5%	\$0.01	1	1	BEST Simulation
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.47	10	\$5,005.59	15%	24%	\$0.05	0	1	6th Plan
Wastewater	Interior Lighting	Energy Management System	per Facility	New	631.60	15	\$34,717.50	20%	50%	\$0.16	1	2	BEST Simulation
Wastewater	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	120	134	AEO 2013
Wastewater	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,959.51	5	\$520.37	5%	40%	\$0.04	2	2	Illinois TRM
Wastewater	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,727.53	5	\$693.88	15%	50%	\$0.04	2	3	Illinois TRM
Wastewater	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,934.63	12	\$4,389.88	4%	25%	\$0.09	6	8	Ameren Missouri TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	653.81	16	\$85.60	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,348.94	10	\$1,052.88	22%	60%	\$0.02	7	10	Ameren Missouri TRM
Wastewater	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$9,502.08	18%	30%	\$10.00	0	0	DEER
Wastewater	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,351.09	8	\$392.91	7%	15%	\$0.03	1	1	CA - DEER
Wastewater	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	195.75	5	\$21.63	10%	25%	\$0.01	0	0	AEG research & analysis
Wastewater	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	61	67	AEO 2013
Wastewater	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	13	24	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	1	2	EIA 2011/Developed from RTF
Wastewater	Interior Lighting	Strategic Energy Management	per Facility	New	629.25	3	\$943.87	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.33	32	\$15,799.25	15%	52%	\$0.56	0	0	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$48.28	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	Existing	2,353.42	3	\$4,912.34	5%	39%	\$0.08	17	17	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,044.49	3	\$1,061.07	0%	5%	\$0.01	2	2	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	706.47	10	\$5,005.59	15%	24%	\$0.05	1	1	6th Plan
Wastewater	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$48.28	0%	0%	\$10.00	0	0	MI - TRM
Wastewater	Miscellaneous	Commissioning	per Facility	New	2,355.87	3	\$4,912.34	5%	39%	\$0.28	5	5	Energy Management Program Design for PC
Wastewater	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Miscellaneous	Strategic Energy Management	per Facility	New	2,044.49	3	\$943.87	0%	5%	\$0.01	1	1	BEST Simulation
Wastewater	Miscellaneous	Transformer - High Efficiency	per Facility	New	191.15	32	\$15,799.25	15%	52%	\$0.56	0	0	6th Plan
Wastewater	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,235.64	10	\$98.50	15%	75%	\$0.00	21	21	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	3,644.19	15	\$634.55	15%	50%	\$0.02	14	14	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	797.28	15	\$276.49	15%	38%	\$0.04	2	2	MI - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	93.89	5	\$17.00	15%	50%	\$0.04	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,545.55	20	\$1,187.99	15%	50%	\$0.07	6	6	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	808.28	15	\$278.57	15%	38%	\$0.04	2	2	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,706.90	10	\$618.33	15%	50%	\$0.05	6	7	VT - TRM
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$724.24	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	Existing	1,377.94	15	\$655.18	8%	38%	\$0.05	4	5	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	Existing	768.48	3	\$69.91	8%	38%	\$0.03	2	3	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,172.87	15	\$1,048.32	8%	38%	\$0.05	7	8	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$193.13	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	224,069.36	10	\$29,168.29	8%	38%	\$0.02	732	740	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	Existing	75,447.14	15	\$8,507.45	8%	38%	\$0.01	249	249	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	Existing	38,234.31	3	\$2,419.86	8%	38%	\$0.02	120	126	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	114,098.47	10	\$21,778.99	8%	38%	\$0.03	357	377	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,133.66	8	\$3,320.24	10%	50%	\$0.25	44	48	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,513.86	8	\$1,177.18	5%	25%	\$0.13	16	17	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$303.68	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$1,265.32	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$4.79	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	39,116.71	17	\$2,994.85	5%	6%	\$0.01	22	22	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	5,904.10	10	\$1,407.00	15%	36%	\$0.03	65	70	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	Existing	38,005.80	17	\$7,191.91	25%	44%	\$0.02	388	397	RSMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$1,695.62	0%	0%	\$10.00	0	0	6th Plan

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Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$819.73	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	30,016.56	10	\$5,759.19	8%	38%	\$0.03	97	99	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	Existing	30,319.93	15	\$7,021.57	8%	38%	\$0.03	99	100	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	Existing	15,805.56	3	\$1,997.21	8%	38%	\$0.05	51	52	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	49,100.08	12	\$19,504.29	8%	38%	\$0.05	156	162	6th Plan
Wastewater	Motors	Retrocommissioning	per Facility	Existing	14,608.27	3	\$4,912.34	5%	39%	\$0.08	257	273	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	Existing	13,552.90	3	\$1,061.07	0%	5%	\$0.01	37	37	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$475.64	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	Existing	4,405.71	10	\$5,005.59	15%	24%	\$0.05	22	23	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$405.19	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Commissioning	per Facility	New	1,484.69	3	\$4,912.34	5%	39%	\$0.28	2	2	Energy Management Program Design for PC
Wastewater	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$98.50	15%	75%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$634.55	15%	50%	\$10.00	0	0	OH - TRM
Wastewater	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$276.49	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$17.00	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,187.99	15%	50%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$278.57	15%	38%	\$10.00	0	0	MI - TRM
Wastewater	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$618.33	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$724.24	15%	30%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$655.18	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$69.91	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$1,048.32	8%	38%	\$10.00	0	0	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$193.13	15%	50%	\$10.00	0	0	VT - TRM
Wastewater	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$29,168.29	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Fan System - Controls	per Facility	New	0.00	15	\$8,507.45	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$2,419.86	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$21,778.99	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	215.41	8	\$3,320.24	10%	50%	\$2.60	0	0	Developed from RTF
Wastewater	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	152.84	8	\$1,177.18	5%	25%	\$1.30	0	0	Developed from RTF
Wastewater	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$303.68	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$1,265.32	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$4.79	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	3,769.86	17	\$2,994.85	5%	6%	\$0.09	0	0	E3T Website
Wastewater	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	587.65	10	\$1,407.00	15%	36%	\$0.35	0	0	6th Plan
Wastewater	Motors	Motors - Variable Frequency Drive	per Facility	New	3,766.95	17	\$4,315.18	25%	44%	\$0.13	2	2	RSMeans 2013
Wastewater	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$1,695.62	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$819.73	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$5,759.19	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$7,021.57	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$1,997.21	8%	38%	\$10.00	0	0	Scaled from Optimization
Wastewater	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$19,504.29	8%	38%	\$10.00	0	0	6th Plan
Wastewater	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Motors	Strategic Energy Management	per Facility	New	1,308.64	3	\$943.87	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$475.64	15%	25%	\$10.00	0	0	MT - IRP 2013
Wastewater	Motors	Transformer - High Efficiency	per Facility	New	120.16	32	\$15,799.25	15%	52%	\$0.56	0	0	6th Plan
Wastewater	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$405.19	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$1,789.71	0%	0%	\$10.00	0	0	PA - TRM
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$122.45	0%	0%	\$10.00	0	0	6th Plan

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Wastewater	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$576.30	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$687.47	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$4,437.24	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$440.42	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$21,246.26	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,358.99	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$21,593.12	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$36.08	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$16.84	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	Existing	0.00	10	\$99.27	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$3,402.05	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,988.60	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$51.14	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,960.21	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$22,452.17	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	Existing	796.55	5	\$215.61	15%	75%	\$0.07	5	5	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	7,944.20	10	\$4,311.63	15%	75%	\$0.08	52	52	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	Existing	2,302.08	5	\$2,175.36	15%	75%	\$0.22	15	15	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,337.55	15%	50%	\$10.00	0	0	Developed from RTF
Wastewater	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$3,210.16	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$178.38	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$2,675.11	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	Existing	3,865.86	3	\$4,912.34	5%	39%	\$0.08	14	14	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	Existing	3,459.95	3	\$1,061.07	0%	5%	\$0.01	2	2	BEST Simulation
Wastewater	Process	Transformer - High Efficiency	per Facility	Existing	1,195.58	10	\$5,005.59	15%	24%	\$0.05	1	1	6th Plan
Wastewater	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$1,789.71	0%	0%	\$10.00	0	0	PA - TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$122.45	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$576.30	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$687.47	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Commissioning	per Facility	New	704.93	3	\$4,912.34	5%	39%	\$0.28	20	9	Energy Management Program Design for PC
Wastewater	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$4,437.24	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$440.42	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$21,246.26	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,358.99	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$21,593.12	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$36.08	0%	0%	\$10.00	0	0	MT - IRP 2013
Wastewater	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$16.84	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Lamps	per Facility	New	0.00	10	\$99.27	0%	0%	\$10.00	0	0	OPA - TRM
Wastewater	Process	Heat Reclaimers	per Facility	New	0.00	10	\$3,402.05	0%	0%	\$10.00	0	0	VT - TRM
Wastewater	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,988.60	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$51.14	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,960.21	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$22,452.17	0%	0%	\$10.00	0	0	6th Plan
Wastewater	Process	Process - Conductivity Controls	per Facility	New	797.38	5	\$215.61	15%	75%	\$0.07	2	2	AEG study for State of New Mexico
Wastewater	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	7,944.27	10	\$4,311.63	15%	75%	\$0.08	16	16	AEG study for State of New Mexico
Wastewater	Process	Process - Timers and Controls	per Facility	New	1,547.44	5	\$2,175.36	15%	75%	\$0.33	16	16	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	2,729.95	15	\$1,337.55	15%	50%	\$0.06	3	3	Developed from RTF
Wastewater	Process	Refrigeration - System Controls	per Facility	New	5,389.24	18	\$3,210.16	15%	50%	\$0.06	6	6	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Maintenance	per Facility	New	1,884.69	3	\$178.38	15%	50%	\$0.04	2	2	AEG study for State of New Mexico
Wastewater	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	5,605.20	15	\$2,675.11	15%	50%	\$0.06	7	7	AEG study for State of New Mexico
Wastewater	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Wastewater	Process	Strategic Energy Management	per Facility	New	2,327.58	3	\$943.87	0%	5%	\$0.01	2	2	BEST Simulation

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Wastewater	Process	Transformer - High Efficiency	per Facility	New	209.14	32	\$15,799.25	15%	52%	\$0.56	1	1	6th Plan
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$19,632.06	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	Existing	415.74	3	\$1,061.07	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	Existing	143.47	10	\$5,005.59	15%	24%	\$0.05	0	0	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	152.28	15	\$32.68	15%	35%	\$0.02	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,734.41	20	\$5,130.98	100%	at stock turnover	\$0.11	6	6	BEST Simulation
Wastewater	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$12,974.20	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Wastewater	Ventilation	Strategic Energy Management	per Facility	New	149.34	3	\$943.87	0%	5%	\$0.01	0	0	BEST Simulation
Wastewater	Ventilation	Transformer - High Efficiency	per Facility	New	14.08	32	\$15,799.25	15%	52%	\$0.56	0	0	6th Plan
Wastewater	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	54.72	15	\$15.14	15%	35%	\$0.03	0	0	6th Plan
Wastewater	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,643.41	20	\$3,192.99	100%	at stock turnover	\$0.13	1	1	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	24,541.85	23	\$63,080.90	2%	at stock turnover	\$0.17	6	6	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	Existing	14,052.90	23	\$7,777.19	6%	at stock turnover	\$0.06	7	7	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	8,145.58	10	\$2,264.36	15%	45%	\$0.04	2	2	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	1,900.54	15	\$1,219.47	15%	60%	\$0.07	1	1	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	Existing	353.69	15	\$305.59	15%	75%	\$0.09	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	Existing	12,092.82	15	\$84,216.26	15%	50%	\$0.70	9	10	BEST Simulation
Water	Cooling	Destratification Fans (HVLS)	per Facility	Existing	10,685.52	12	\$19,632.09	15%	50%	\$0.22	8	10	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	Existing	3,163.07	15	\$41,830.37	20%	50%	\$0.17	2	2	BEST Simulation
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	23,686.13	23	\$56,820.54	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	Existing	9,855.09	18	\$14,162.74	15%	75%	\$0.10	2	2	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	703.86	18	\$1,501.61	15%	25%	\$0.07	0	0	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	Existing	4,297.63	10	\$9,378.96	18%	30%	\$0.10	2	1	DEER
Water	Cooling	Insulation - Ceiling - R-38	per Facility	Existing	6,464.28	45	\$182,938.10	15%	25%	\$0.16	1	2	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	Existing	2,018.52	20	\$2,853.48	15%	25%	\$0.07	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	Existing	-131.49	45	\$25,428.32	45%	50%	\$0.06	0	0	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	Existing	19,224.16	23	\$64,722.41	4%	at stock turnover	\$0.35	2	2	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	Existing	2,899.00	3	\$1,073.47	0%	5%	\$0.01	0	0	BEST Simulation
Water	Cooling	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$223.49	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	Existing	983.40	10	\$5,065.28	15%	24%	\$0.05	0	0	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	Existing	22,432.69	23	\$11,767.22	3%	at stock turnover	\$0.05	6	6	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	Existing	6,315.10	10	\$1,825.08	15%	45%	\$0.04	1	1	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	Existing	9,436.18	4	\$1,231.13	15%	50%	\$0.03	1	2	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	Existing	0.00	0	\$0.00	15%	25%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	Existing	2,598.57	15	\$1,724.89	15%	60%	\$0.07	0	1	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	Existing	338.18	15	\$303.34	15%	75%	\$0.09	0	0	BEST Simulation
Water	Cooling	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	18,581.64	23	\$47,271.90	2%	at stock turnover	\$0.15	3	2	BEST Simulation
Water	Cooling	Air-Cooled Chiller - 1.00 kW/ton, COP 3.52	per Facility	New	8,576.73	23	\$43,687.45	6%	at stock turnover	\$0.53	3	3	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	5,735.06	10	\$1,768.13	15%	45%	\$0.04	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Air-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,193.30	15	\$852.55	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Air-Cooled Chiller - Variable Speed Condenser Fans	per Facility	New	0.00	15	\$3,424.95	15%	75%	\$10.00	0	0	BEST Simulation
Water	Cooling	Cool Roofs - Absorbptivity 0.2	per Facility	New	6,532.69	15	\$84,216.26	15%	50%	\$1.21	2	2	BEST Simulation
Water	Cooling	Destratification Fans (HVLS)	per Facility	New	5,768.00	12	\$12,974.21	15%	50%	\$0.25	1	1	Environment Design Guide, November 2007 (PDF)
Water	Cooling	Energy Management System	per Facility	New	1,712.20	15	\$34,717.48	20%	50%	\$0.16	0	0	BEST Simulation
Water	Cooling	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	18,007.84	23	\$42,580.48	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Cooling	Heat Pump - Maintenance	per Facility	New	6,444.73	18	\$10,404.26	15%	75%	\$0.11	0	0	AEG research & analysis
Water	Cooling	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	599.09	18	\$538.71	15%	25%	\$0.09	0	0	BEST Simulation
Water	Cooling	HVAC - Economizer	per Facility	New	2,223.71	10	\$5,536.99	18%	30%	\$0.11	0	0	DEER

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Cooling	Insulation - Ceiling - R-38	per Facility	New	407.58	45	\$146,281.12	15%	25%	\$0.14	0	0	BEST Simulation
Water	Cooling	Insulation - Ducting - R-8	per Facility	New	1,392.29	20	\$1,541.86	15%	25%	\$0.09	0	0	BEST Simulation
Water	Cooling	Insulation - Wall Cavity - R-23	per Facility	New	-50.97	45	\$3,030.09	45%	50%	\$0.06	0	0	BEST Simulation
Water	Cooling	RTU - EER 12.0	per Facility	New	11,364.98	23	\$37,803.50	4%	at stock turnover	\$0.35	1	1	BEST Simulation
Water	Cooling	Strategic Energy Management	per Facility	New	1,564.57	3	\$956.26	0%	5%	\$0.01	0	0	BEST Simulation
Water	Cooling	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$599.40	10%	10%	\$10.00	0	0	BEST Simulation
Water	Cooling	Transformer - High Efficiency	per Facility	New	134.04	32	\$16,006.33	15%	52%	\$0.59	0	0	6th Plan
Water	Cooling	Water-Cooled Chiller - 0.48 kw/ton, COP 7.3	per Facility	New	13,741.16	23	\$8,791.38	3%	at stock turnover	\$0.07	2	2	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Chilled Water Reset - Enabled	per Facility	New	3,221.15	10	\$1,116.18	15%	45%	\$0.04	0	0	DEER
Water	Cooling	Water-Cooled Chiller - Condenser Water Temperature Reset - Enabled	per Facility	New	4,853.16	4	\$760.28	15%	50%	\$0.04	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Efficient Mechanical Layout - Efficient Layout	per Facility	New	0.00	0	\$0.00	15%	75%	\$10.00	0	0	AEG research & analysis
Water	Cooling	Water-Cooled Chiller - Variable Speed Chilled Water Loop	per Facility	New	1,377.52	15	\$1,094.02	15%	60%	\$0.07	0	0	BEST Simulation
Water	Cooling	Water-Cooled Chiller - Variable Speed Cooling Tower Fans	per Facility	New	0.00	15	\$5,301.73	15%	75%	\$10.00	0	0	BEST Simulation
Water	Exterior Lighting	Energy Management System	per Facility	Existing	124.58	15	\$41,830.37	20%	50%	\$0.17	1	2	BEST Simulation
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	Existing	410.59	5	\$76.75	15%	25%	\$0.03	1	2	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	Existing	161.21	10	\$179.93	33%	60%	\$0.11	1	3	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	Existing	2,169.05	10	\$1,228.78	15%	30%	\$0.06	10	19	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	327.69	15	\$67.77	100%	at stock turnover	\$0.01	52	52	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	20.51	15	\$13.65	100%	at stock turnover	\$0.02	26	26	AEO 2013
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	25.16	15	\$11.60	100%	at stock turnover	\$0.03	37	73	EIA 2011/Developed from RTF
Water	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	25.67	15	\$5.43	100%	at stock turnover	\$0.04	4	11	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	Existing	118.82	3	\$1,073.47	0%	5%	\$0.01	0	0	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	Existing	40.69	10	\$5,065.28	15%	24%	\$0.05	0	0	6th Plan
Water	Exterior Lighting	Energy Management System	per Facility	New	108.74	15	\$34,717.48	20%	50%	\$0.16	0	0	BEST Simulation

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Exterior Lighting	Exterior Lighting - Bi-Level Fixture	per Facility	New	357.08	5	\$76.42	15%	25%	\$0.03	0	1	Illinois TRM
Water	Exterior Lighting	Exterior Lighting - Daylighting Controls	per Facility	New	146.32	10	\$110.25	44%	60%	\$0.06	0	0	AEG research & analysis
Water	Exterior Lighting	Exterior Lighting - Photovoltaic Installation	per Facility	New	1,887.22	10	\$1,222.89	15%	30%	\$0.06	3	4	AEG research & analysis
Water	Exterior Lighting	HID - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	327.69	15	\$67.77	100%	at stock turnover	\$0.01	23	25	AEO 2013
Water	Exterior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	20.51	15	\$13.65	100%	at stock turnover	\$0.04	11	13	AEO 2013
Water	Exterior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	25.16	15	\$11.60	100%	at stock turnover	\$0.03	16	31	EIA 2011/Developed from RTF
Water	Exterior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	25.67	15	\$5.43	100%	at stock turnover	\$0.05	1	2	EIA 2011/Developed from RTF
Water	Exterior Lighting	Strategic Energy Management	per Facility	New	103.29	3	\$956.26	0%	5%	\$0.01	0	0	BEST Simulation
Water	Exterior Lighting	Transformer - High Efficiency	per Facility	New	8.84	32	\$16,006.33	15%	52%	\$0.59	0	0	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	Existing	6,626.87	23	\$48,180.23	2%	at stock turnover	\$0.17	2	1	BEST Simulation
Water	Heating	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$19,632.09	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	Existing	23,402.51	15	\$41,830.37	20%	50%	\$0.17	14	14	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	Existing	2,257.05	23	\$36,885.30	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	Existing	4,126.12	18	\$14,162.74	15%	75%	\$0.10	1	1	AEG research & analysis
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	Existing	1,682.42	18	\$1,501.61	15%	25%	\$0.07	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	Existing	94,451.31	45	\$182,938.10	15%	25%	\$0.16	19	19	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	Existing	1,793.36	20	\$2,853.48	15%	25%	\$0.07	0	0	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	Existing	35,515.06	45	\$25,428.32	45%	50%	\$0.06	4	4	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	Existing	20,568.66	3	\$1,073.47	0%	5%	\$0.01	2	2	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	Existing	0.00	5	\$223.49	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	Existing	7,107.47	10	\$5,065.28	15%	24%	\$0.05	1	1	6th Plan
Water	Heating	Air Source Heat Pump - EER 12, COP 3.4	per Facility	New	10,933.20	23	\$41,922.65	2%	at stock turnover	\$0.15	1	1	BEST Simulation
Water	Heating	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$12,974.21	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Heating	Energy Management System	per Facility	New	21,973.41	15	\$34,717.48	20%	50%	\$0.16	4	4	BEST Simulation
Water	Heating	Geothermal Heat Pump - EER 27.8, COP 4.9 Ductless, Var.Ref.Flow	per Facility	New	7,689.21	23	\$27,641.31	0%	at stock turnover	\$0.00	0	0	BEST Simulation
Water	Heating	Heat Pump - Maintenance	per Facility	New	2,670.60	18	\$10,404.26	15%	75%	\$0.11	0	0	AEG research & analysis

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Heating	HVAC - Duct Repair and Sealing - Sealed	per Facility	New	-35.50	18	\$538.71	15%	25%	\$0.09	0	0	BEST Simulation
Water	Heating	Insulation - Ceiling - R-38	per Facility	New	88,992.47	45	\$146,281.12	15%	25%	\$0.14	5	6	BEST Simulation
Water	Heating	Insulation - Ducting - R-8	per Facility	New	174.50	20	\$1,541.86	15%	25%	\$0.09	0	0	BEST Simulation
Water	Heating	Insulation - Wall Cavity - R-23	per Facility	New	4,733.12	45	\$3,030.09	45%	50%	\$0.06	0	0	BEST Simulation
Water	Heating	Strategic Energy Management	per Facility	New	19,322.06	3	\$956.26	0%	5%	\$0.01	1	1	BEST Simulation
Water	Heating	Thermostat - Clock/Programmable	per Facility	New	0.00	5	\$599.40	10%	10%	\$10.00	0	0	BEST Simulation
Water	Heating	Transformer - High Efficiency	per Facility	New	1,785.14	32	\$16,006.33	15%	52%	\$0.59	0	0	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	Existing	674.18	15	\$41,830.37	20%	50%	\$0.17	6	10	BEST Simulation
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	Existing	610.63	15	\$126.29	100%	at stock turnover	\$0.01	396	401	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	Existing	2,466.49	5	\$520.95	5%	40%	\$0.03	8	17	Illinois TRM
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	Existing	3,187.52	5	\$694.56	15%	50%	\$0.03	11	23	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	Existing	4,207.18	12	\$4,669.79	3%	25%	\$0.10	28	54	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	Existing	722.96	16	\$85.95	1%	3%	\$0.01	0	1	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	Existing	4,816.54	10	\$1,024.23	7%	60%	\$0.02	59	107	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	Existing	0.00	25	\$13,165.48	15%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	Existing	1,448.91	8	\$403.63	7%	15%	\$0.03	4	7	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	Existing	277.54	5	\$21.84	10%	25%	\$0.01	0	1	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	Existing	29.28	15	\$19.49	100%	at stock turnover	\$0.03	201	214	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	Existing	39.22	15	\$18.08	100%	at stock turnover	\$0.03	41	82	EIA 2011/Developed from RTF
Water	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	Existing	40.03	15	\$8.47	100%	at stock turnover	\$0.04	5	13	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	Existing	697.71	3	\$1,073.47	0%	5%	\$0.01	1	2	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	Existing	210.47	10	\$5,065.28	15%	24%	\$0.05	1	1	6th Plan
Water	Interior Lighting	Energy Management System	per Facility	New	631.60	15	\$34,717.48	20%	50%	\$0.16	2	3	BEST Simulation
Water	Interior Lighting	High-Bay Fixtures - LED (170 lm/W) - LED (85.4 lm/W)	per Facility	New	610.63	15	\$126.29	100%	at stock turnover	\$0.01	173	193	AEO 2013
Water	Interior Lighting	Interior Fluorescent - Bi-Level Fixture	per Facility	New	1,959.51	5	\$520.41	5%	40%	\$0.04	2	3	Illinois TRM

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Interior Lighting	Interior Fluorescent - Delamp and Install Reflectors	per Facility	New	2,727.53	5	\$693.81	15%	50%	\$0.04	3	5	Illinois TRM
Water	Interior Lighting	Interior Lighting - Daylighting Controls	per Facility	New	3,934.63	12	\$4,389.89	4%	25%	\$0.09	8	12	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - LED Exit Lighting	per Facility	New	653.81	16	\$85.63	1%	3%	\$0.01	0	0	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Occupancy Sensors	per Facility	New	4,348.94	10	\$1,052.81	22%	60%	\$0.02	10	14	Ameren Missouri TRM
Water	Interior Lighting	Interior Lighting - Skylights	per Facility	New	0.00	25	\$13,165.48	18%	30%	\$10.00	0	0	DEER
Water	Interior Lighting	Interior Lighting - Timeclocks and Timers	per Facility	New	1,351.09	8	\$392.93	7%	15%	\$0.03	1	2	CA - DEER
Water	Interior Lighting	Interior Screw-in - Task Lighting	per Facility	New	195.75	5	\$21.62	10%	25%	\$0.01	0	0	AEG research & analysis
Water	Interior Lighting	Linear Fluorescent LED (170 lm/W) - LED (91 lm/W)	per Facility	New	29.28	15	\$19.49	100%	at stock turnover	\$0.04	89	97	AEO 2013
Water	Interior Lighting	Screw-in - LED (170 lm/W) - LED (73.4 lm/W)	per Facility	New	39.22	15	\$18.08	100%	at stock turnover	\$0.03	18	35	EIA 2011/Developed from RTF
Water	Interior Lighting	Screw-in - LED (73.4 lm/W)	per Facility	New	40.03	15	\$8.47	100%	at stock turnover	\$0.05	1	2	EIA 2011/Developed from RTF
Water	Interior Lighting	Strategic Energy Management	per Facility	New	629.25	3	\$956.26	0%	5%	\$0.01	0	0	BEST Simulation
Water	Interior Lighting	Transformer - High Efficiency	per Facility	New	51.33	32	\$16,006.33	15%	52%	\$0.59	0	0	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	Existing	0.00	5	\$66.90	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	Existing	2,353.42	3	\$5,029.64	5%	39%	\$0.07	25	25	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	Existing	2,044.49	3	\$1,073.47	0%	5%	\$0.01	3	3	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	Existing	706.47	10	\$5,065.28	15%	24%	\$0.05	2	2	6th Plan
Water	Miscellaneous	Agriculture - Engine Block Heater Timers - Timer Installed	per Facility	New	0.00	5	\$66.90	0%	0%	\$10.00	0	0	MI - TRM
Water	Miscellaneous	Commissioning	per Facility	New	2,355.87	3	\$5,029.64	5%	39%	\$0.36	7	7	Energy Management Program Design for PC
Water	Miscellaneous	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Miscellaneous	Strategic Energy Management	per Facility	New	2,044.49	3	\$956.26	0%	5%	\$0.01	1	1	BEST Simulation
Water	Miscellaneous	Transformer - High Efficiency	per Facility	New	191.15	32	\$16,006.33	15%	52%	\$0.59	1	1	6th Plan
Water	Motors	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	Existing	3,235.64	10	\$98.47	15%	75%	\$0.00	31	31	MI - TRM

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	Existing	3,606.03	15	\$634.51	15%	50%	\$0.02	19	21	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	Existing	802.23	15	\$276.48	15%	38%	\$0.04	3	3	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	Existing	93.89	5	\$17.02	15%	50%	\$0.04	0	1	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	Existing	1,545.55	20	\$1,188.00	15%	50%	\$0.07	8	9	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	Existing	803.33	15	\$278.62	15%	38%	\$0.04	3	3	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	Existing	1,705.86	10	\$618.35	15%	50%	\$0.05	9	10	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	Existing	0.00	10	\$1,003.47	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	Existing	1,345.30	15	\$655.17	8%	38%	\$0.05	6	7	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Maintenance	per Facility	Existing	766.39	3	\$69.89	8%	38%	\$0.03	3	4	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	Existing	2,203.36	15	\$1,048.31	8%	38%	\$0.05	10	11	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	Existing	0.00	5	\$267.59	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	Existing	0.00	10	\$1,364.82	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	Existing	0.00	15	\$398.07	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	Existing	0.00	3	\$113.24	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	Existing	0.00	10	\$1,019.09	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	Existing	2,696.03	8	\$3,420.35	10%	50%	\$0.21	65	70	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	Existing	1,912.87	8	\$1,212.62	5%	25%	\$0.10	23	25	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	Existing	0.00	10	\$420.76	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	Existing	0.00	10	\$30.08	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	Existing	0.00	1	\$0.11	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	Existing	48,895.89	17	\$3,085.11	5%	6%	\$0.01	31	31	E3T Website

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	Existing	7,573.33	10	\$1,449.38	15%	36%	\$0.03	98	103	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	Existing	48,783.13	17	\$7,408.63	25%	44%	\$0.02	588	589	RSMeans 2013
Water	Motors	Panel: Hydraulic Press	per Facility	Existing	0.00	10	\$40.35	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	Existing	0.00	10	\$19.48	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	Existing	108,435.48	10	\$20,805.10	8%	38%	\$0.03	507	517	6th Plan
Water	Motors	Pumping System - Controls	per Facility	Existing	109,531.41	15	\$25,365.49	8%	38%	\$0.03	517	522	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	Existing	57,062.46	3	\$7,215.11	8%	38%	\$0.05	264	272	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	Existing	177,375.13	12	\$70,459.83	8%	38%	\$0.05	816	845	6th Plan
Water	Motors	Retrocommissioning	per Facility	Existing	18,459.07	3	\$5,029.64	5%	39%	\$0.07	379	399	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	Existing	16,941.12	3	\$1,073.47	0%	5%	\$0.01	54	54	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	Existing	0.00	12	\$11.35	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	Existing	5,662.87	10	\$5,065.28	15%	24%	\$0.05	33	34	6th Plan
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	Existing	0.00	10	\$269.95	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Commissioning	per Facility	New	35.90	3	\$5,029.64	5%	39%	\$0.36	0	0	Energy Management Program Design for PC
Water	Motors	Compressed Air - Air Usage Reduction	per Facility	New	0.00	10	\$98.47	15%	75%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Compressor Replacement - Efficient Compressor Installed	per Facility	New	0.00	15	\$634.51	15%	50%	\$10.00	0	0	OH - TRM
Water	Motors	Compressed Air - Heat of Compression Dessicant Dryer	per Facility	New	0.00	15	\$276.48	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Low Pressure-Drop Filters	per Facility	New	0.00	5	\$17.02	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Outside Air Intake	per Facility	New	0.00	20	\$1,188.00	15%	50%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Raise Compressed Air Dryer Dewpoint - Refrigerated Dryer	per Facility	New	0.00	15	\$278.62	15%	38%	\$10.00	0	0	MI - TRM
Water	Motors	Compressed Air - Receiver Capacity Addition - Increased Capacity Receivers	per Facility	New	0.00	10	\$618.35	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - Refrigerated Cycling Dryers - Cycling Refrigerated Dryer	per Facility	New	0.00	10	\$1,003.47	15%	30%	\$10.00	0	0	VT - TRM
Water	Motors	Compressed Air - System Controls	per Facility	New	0.00	15	\$655.17	8%	38%	\$10.00	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Compressed Air - System Maintenance	per Facility	New	0.00	3	\$69.89	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - System Optimization and Improvements - Optimized System	per Facility	New	0.00	15	\$1,048.31	8%	38%	\$10.00	0	0	AEG study for State of New Mexico
Water	Motors	Compressed Air - Zero Loss Condensate Drain	per Facility	New	0.00	5	\$267.59	15%	50%	\$10.00	0	0	VT - TRM
Water	Motors	Fan Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$1,364.82	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Fan System - Controls	per Facility	New	0.00	15	\$398.07	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Maintenance	per Facility	New	0.00	3	\$113.24	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Fan System - Optimization - Optimized System	per Facility	New	0.00	10	\$1,019.09	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Green Motor Rewind (<100 HP) - Efficient Motor Rewind	per Facility	New	5.13	8	\$3,420.35	10%	50%	\$112.54	0	0	Developed from RTF
Water	Motors	Green Motor Rewind (100 HP+) - Efficient Motor Rewind	per Facility	New	3.64	8	\$1,212.62	5%	25%	\$56.27	0	0	Developed from RTF
Water	Motors	High-efficiency Livestock Waterers	per Facility	New	0.00	10	\$420.76	0%	0%	\$10.00	0	0	OPA - TRM
Water	Motors	Kraft: Efficient Agitator	per Facility	New	0.00	10	\$30.08	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Mech Pulp: Refiner Plate Improvement	per Facility	New	0.00	1	\$0.11	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Motors - Magnetic Adjustable Speed Drives - Magnetic Adjustable Speed Drive	per Facility	New	88.73	17	\$3,085.11	5%	6%	\$3.86	0	0	E3T Website
Water	Motors	Motors - Synchronous Belts - Synchronous Timing Belts	per Facility	New	13.98	10	\$1,449.38	15%	36%	\$15.06	0	0	6th Plan
Water	Motors	Motors - Variable Frequency Drive	per Facility	New	88.66	17	\$4,445.22	25%	44%	\$5.55	0	0	RSMeans 2013
Water	Motors	Panel: Hydraulic Press	per Facility	New	0.00	10	\$40.35	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Paper: Efficient Pulp Screen - Efficient Screen	per Facility	New	0.00	10	\$19.48	0%	0%	\$10.00	0	0	6th Plan
Water	Motors	Pump Equipment Upgrade - Upgraded Equipment	per Facility	New	0.00	10	\$20,805.10	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Pumping System - Controls	per Facility	New	0.00	15	\$25,365.49	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Maintenance	per Facility	New	0.00	3	\$7,215.11	8%	38%	\$10.00	0	0	Scaled from Optimization
Water	Motors	Pumping System - Optimization - Optimized System	per Facility	New	0.00	12	\$70,459.83	8%	38%	\$10.00	0	0	6th Plan
Water	Motors	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Motors	Strategic Energy Management	per Facility	New	31.16	3	\$956.26	0%	5%	\$0.01	0	0	BEST Simulation
Water	Motors	Switch from Belt Drive to Direct Drive	per Facility	New	0.00	12	\$11.35	15%	25%	\$10.00	0	0	MT - IRP 2013
Water	Motors	Transformer - High Efficiency	per Facility	New	2.91	32	\$16,006.33	15%	52%	\$0.59	0	0	6th Plan

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Motors	Wood: Replace Pneumatic Conveyor	per Facility	New	0.00	10	\$269.95	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	Existing	0.00	10	\$6,465.32	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	Existing	0.00	1	\$122.45	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	Existing	0.00	10	\$576.28	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	Existing	0.00	20	\$687.49	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	Existing	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	Existing	0.00	10	\$6,147.96	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	Existing	0.00	10	\$440.45	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	Existing	0.00	10	\$21,246.20	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	Existing	0.00	10	\$2,358.98	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	Existing	0.00	10	\$21,593.21	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	Existing	0.00	15	\$36.07	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	Existing	0.00	15	\$23.33	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	Existing	0.00	10	\$137.54	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	Existing	0.00	10	\$4,713.67	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	Existing	0.00	10	\$2,988.56	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	Existing	0.00	5	\$51.16	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	Existing	0.00	10	\$1,960.27	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	Existing	0.00	10	\$22,452.18	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	Existing	796.55	5	\$215.57	15%	75%	\$0.07	8	8	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	Existing	7,884.00	10	\$4,311.64	15%	75%	\$0.08	74	75	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	Existing	2,302.08	5	\$2,175.41	15%	75%	\$0.22	21	22	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	Existing	0.00	15	\$1,337.53	15%	50%	\$10.00	0	0	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	Existing	0.00	18	\$3,210.13	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	Existing	0.00	3	\$178.32	15%	50%	\$10.00	0	0	AEG study for State of New Mexico
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	Existing	0.00	15	\$2,675.16	15%	50%	\$10.00	0	0	AEG study for State of New Mexico

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Retrocommissioning	per Facility	Existing	3,972.10	3	\$5,029.64	5%	39%	\$0.07	21	21	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	Existing	3,459.95	3	\$1,073.47	0%	5%	\$0.01	3	3	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	Existing	1,195.58	10	\$5,065.28	15%	24%	\$0.05	2	2	6th Plan
Water	Process	Automatic Milker Takeoffs	per Facility	New	0.00	10	\$6,465.32	0%	0%	\$10.00	0	0	PA - TRM
Water	Process	Clean Room: Change Filter Strategy	per Facility	New	0.00	1	\$122.45	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Chiller Optimize	per Facility	New	0.00	10	\$576.28	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Clean Room: Clean Room HVAC	per Facility	New	0.00	20	\$687.49	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Commissioning	per Facility	New	943.63	3	\$5,029.64	5%	39%	\$0.36	25	12	Energy Management Program Design for PC
Water	Process	Dairy - Milk Precoolers - Precooler Installed	per Facility	New	0.00	10	\$6,147.96	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Elec Chip Fab: Eliminate Exhaust	per Facility	New	0.00	10	\$440.45	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Exhaust Injector	per Facility	New	0.00	10	\$21,246.20	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Reduce Gas Pressure	per Facility	New	0.00	10	\$2,358.98	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Elec Chip Fab: Solidstate Chiller	per Facility	New	0.00	10	\$21,593.21	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Heat Lamp Setback (Microzone)	per Facility	New	0.00	15	\$36.07	0%	0%	\$10.00	0	0	MT - IRP 2013
Water	Process	Heat Lamp/Heating Pad Controller	per Facility	New	0.00	15	\$23.33	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Lamps	per Facility	New	0.00	10	\$137.54	0%	0%	\$10.00	0	0	OPA - TRM
Water	Process	Heat Reclaimers	per Facility	New	0.00	10	\$4,713.67	0%	0%	\$10.00	0	0	VT - TRM
Water	Process	Kraft: Effluent Treatment System	per Facility	New	0.00	10	\$2,988.56	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Mech Pulp: Premium Process	per Facility	New	0.00	5	\$51.16	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Metal: New Arc Furnace	per Facility	New	0.00	10	\$1,960.27	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Paper: Premium Control Large Material	per Facility	New	0.00	10	\$22,452.18	0%	0%	\$10.00	0	0	6th Plan
Water	Process	Process - Conductivity Controls	per Facility	New	797.38	5	\$215.57	15%	75%	\$0.07	2	2	AEG study for State of New Mexico
Water	Process	Process - Controls on Fume Hoods - Advanced Controls	per Facility	New	7,944.27	10	\$4,311.64	15%	75%	\$0.08	23	23	AEG study for State of New Mexico
Water	Process	Process - Timers and Controls	per Facility	New	1,608.63	5	\$2,175.41	15%	75%	\$0.32	19	19	AEG study for State of New Mexico
Water	Process	Refrigeration - Floating Head Pressure - Wetbulb Reset Controls	per Facility	New	2,802.60	15	\$1,337.53	15%	50%	\$0.06	5	5	Developed from RTF
Water	Process	Refrigeration - System Controls	per Facility	New	5,389.24	18	\$3,210.13	15%	50%	\$0.06	9	9	AEG study for State of New Mexico
Water	Process	Refrigeration - System Maintenance	per Facility	New	1,884.69	3	\$178.32	15%	50%	\$0.04	3	3	AEG study for State of New Mexico

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Water	Process	Refrigeration - System Optimization - Optimized System	per Facility	New	5,532.56	15	\$2,675.16	15%	50%	\$0.06	9	9	AEG study for State of New Mexico
Water	Process	Retrocommissioning	per Facility	New	0.00	3	\$0.00	0%	0%	\$10.00	0	0	Energy Management Program Design for PC
Water	Process	Strategic Energy Management	per Facility	New	2,398.35	3	\$956.26	0%	5%	\$0.01	2	2	BEST Simulation
Water	Process	Transformer - High Efficiency	per Facility	New	214.16	32	\$16,006.33	15%	52%	\$0.59	2	2	6th Plan
Water	Ventilation	Destratification Fans (HVLS)	per Facility	Existing	0.00	12	\$19,632.09	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	Existing	415.74	3	\$1,073.47	0%	5%	\$0.01	0	0	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	Existing	143.47	10	\$5,065.28	15%	24%	\$0.05	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	Existing	152.28	15	\$32.65	15%	35%	\$0.02	0	0	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	Existing	4,734.41	20	\$5,130.98	100%	at stock turnover	\$0.11	9	9	BEST Simulation
Water	Ventilation	Destratification Fans (HVLS)	per Facility	New	0.00	12	\$12,974.21	15%	50%	\$0.00	0	0	Environment Design Guide, November 2007 (PDF)
Water	Ventilation	Strategic Energy Management	per Facility	New	149.34	3	\$956.26	0%	5%	\$0.01	0	0	BEST Simulation
Water	Ventilation	Transformer - High Efficiency	per Facility	New	14.08	32	\$16,006.33	15%	52%	\$0.59	0	0	6th Plan
Water	Ventilation	Ventilation - CO2 Controlled - CO2 Based Controls	per Facility	New	54.72	15	\$15.20	15%	35%	\$0.03	0	0	6th Plan
Water	Ventilation	Ventilation - Variable Air Volume	per Facility	New	2,643.41	20	\$3,192.99	100%	at stock turnover	\$0.13	1	1	BEST Simulation

Irrigation Measures

California Irrigation Measure Assumptions

Table H-16 Table of California Irrigation Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	Existing	567.35	8	\$142.94	10%	12%	\$0.04	28	29	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Gasket Replacement	Service Point	Existing	62.69	5	\$40.13	73%	75%	\$0.15	3	4	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	Existing	58.98	8	\$19.41	10%	75%	\$0.06	105	108	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	Existing	189.65	8	\$24.24	10%	75%	\$0.02	173	173	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	Existing	166.33	10	\$213.00	8%	10%	\$0.18	8	9	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	Existing	2,169.73	5	\$450.87	53%	60%	\$0.05	421	431	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	Existing	2,093.23	10	\$2,819.33	15%	30%	\$0.19	1,271	1,327	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	Existing	2,610.16	5	\$335.70	5%	32%	\$0.03	1,972	1,977	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	Existing	372.07	10	\$784.12	55%	75%	\$0.30	199	210	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	Existing	3,077.56	4	\$1,018.63	4%	5%	\$0.09	81	83	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	Existing	127.14	8	\$82.16	73%	75%	\$0.11	7	7	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	Existing	1,934.13	10	\$490.54	8%	38%	\$0.04	1,610	1,634	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	Existing	2,507.43	5	\$1,832.77	30%	36%	\$0.17	380	396	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	Existing	173.41	5	\$482.96	15%	18%	\$0.64	12	12	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	Existing	4,956.26	5	\$3,029.46	55%	62%	\$0.14	910	942	Developed from RTF "AgIrrigationHardware" v3.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Scientific Irrigation Practices	Service Point	Existing	1,449.37	1	\$167.84	43%	75%	\$0.11	1,271	1,306	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	New	565.71	8	\$142.94	10%	12%	\$0.04	3	3	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Gasket Replacement	Service Point	New	0.00	5	\$40.13	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	New	58.93	8	\$19.41	10%	75%	\$0.06	12	12	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	New	188.94	8	\$24.24	9%	75%	\$0.02	20	20	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	New	164.49	10	\$213.00	8%	10%	\$0.18	1	1	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	New	2,163.47	5	\$450.87	53%	60%	\$0.05	47	47	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	New	2,104.80	10	\$1,691.60	15%	30%	\$0.12	143	147	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	New	2,602.68	5	\$335.70	5%	32%	\$0.03	219	219	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	New	371.02	10	\$784.12	55%	75%	\$0.30	22	23	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	New	3,068.67	4	\$1,018.63	4%	5%	\$0.09	9	9	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	New	0.00	8	\$82.16	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	New	1,928.57	10	\$490.54	8%	38%	\$0.04	179	180	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	New	2,479.67	5	\$1,832.77	30%	36%	\$0.17	41	43	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	New	172.91	5	\$482.96	15%	18%	\$0.65	1	1	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	New	4,901.23	5	\$3,029.46	55%	62%	\$0.14	99	102	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Scientific Irrigation Practices	Service Point	New	1,445.25	1	\$167.84	43%	75%	\$0.12	141	143	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03

Idaho Irrigation Measure Assumptions

Table H-17 Table of Idaho Irrigation Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	Existing	1,460.48	8	\$366.90	10%	12%	\$0.04	163	167	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Gasket Replacement	Service Point	Existing	161.46	5	\$103.00	73%	75%	\$0.15	20	21	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	Existing	28.44	8	\$9.22	10%	75%	\$0.06	115	117	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	Existing	664.12	8	\$84.87	10%	75%	\$0.02	1,367	1,371	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	Existing	428.41	10	\$546.73	8%	10%	\$0.18	48	50	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	Existing	5,585.33	5	\$1,157.30	53%	60%	\$0.05	2,441	2,502	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	Existing	5,377.28	10	\$7,236.69	15%	30%	\$0.19	7,363	7,693	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	Existing	6,719.05	5	\$861.68	5%	32%	\$0.03	11,443	11,486	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	Existing	958.31	10	\$2,012.69	55%	75%	\$0.30	1,157	1,219	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	Existing	7,926.54	4	\$2,614.63	4%	5%	\$0.09	470	484	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	Existing	327.47	8	\$210.88	73%	75%	\$0.11	40	42	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	Existing	4,978.84	10	\$1,259.12	8%	38%	\$0.04	9,346	9,489	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	Existing	6,458.14	5	\$4,704.39	30%	36%	\$0.17	2,206	2,299	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	Existing	446.62	5	\$1,239.67	15%	18%	\$0.64	69	72	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	Existing	12,765.33	5	\$7,776.07	55%	62%	\$0.14	5,285	5,477	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Scientific Irrigation Practices	Service Point	Existing	3,732.99	1	\$430.81	43%	75%	\$0.11	7,382	7,592	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	New	1,455.15	8	\$366.90	10%	12%	\$0.04	18	18	Developed from RTF "AgIrrigationHardware" v3.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Gasket Replacement	Service Point	New	0.00	5	\$103.00	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	New	28.41	8	\$9.22	10%	75%	\$0.06	13	13	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	New	661.62	8	\$84.87	9%	75%	\$0.02	155	155	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	New	423.34	10	\$546.73	8%	10%	\$0.18	5	5	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	New	5,564.98	5	\$1,157.30	53%	60%	\$0.05	273	277	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	New	5,403.02	10	\$4,342.01	15%	30%	\$0.12	836	856	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	New	6,694.71	5	\$861.68	5%	32%	\$0.03	1,279	1,280	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	New	954.85	10	\$2,012.69	55%	75%	\$0.30	129	134	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	New	7,897.63	4	\$2,614.63	4%	5%	\$0.09	53	53	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	New	0.00	8	\$210.88	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	New	4,960.75	10	\$1,259.12	8%	38%	\$0.04	1,044	1,054	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	New	6,381.75	5	\$4,704.39	30%	36%	\$0.17	243	251	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	New	445.01	5	\$1,239.67	15%	18%	\$0.65	8	8	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	New	12,613.93	5	\$7,776.07	55%	62%	\$0.14	581	598	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Scientific Irrigation Practices	Service Point	New	3,719.53	1	\$430.81	43%	75%	\$0.11	825	840	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03

Utah Irrigation Measure Assumptions

Table H-18 Table of Utah Irrigation Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	Existing	867.55	8	\$218.16	10%	12%	\$0.02	55	56	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Gasket Replacement	Service Point	Existing	95.89	5	\$61.24	73%	75%	\$0.05	7	7	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	Existing	41.67	8	\$13.66	10%	75%	\$0.03	95	98	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	Existing	359.18	8	\$45.90	10%	75%	\$0.01	420	421	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	Existing	254.43	10	\$325.08	8%	10%	\$0.10	16	17	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	Existing	3,317.78	5	\$688.12	53%	60%	\$0.02	823	844	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	Existing	3,196.43	10	\$4,302.90	15%	30%	\$0.10	2,485	2,596	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	Existing	3,991.23	5	\$512.35	5%	32%	\$0.01	3,860	3,873	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	Existing	569.15	10	\$1,196.74	55%	75%	\$0.16	390	411	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	Existing	4,707.64	4	\$1,554.65	4%	5%	\$0.03	159	163	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	Existing	194.49	8	\$125.39	73%	75%	\$0.05	14	14	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	Existing	2,957.52	10	\$748.67	8%	38%	\$0.02	3,153	3,200	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	Existing	3,835.54	5	\$2,797.21	30%	36%	\$0.05	744	775	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	Existing	265.25	5	\$737.10	15%	18%	\$0.21	23	24	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	Existing	7,581.43	5	\$4,623.61	55%	62%	\$0.05	1,782	1,847	Developed from RTF "AgIrrigationHardware" v3.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Scientific Irrigation Practices	Service Point	Existing	2,217.05	1	\$256.16	43%	75%	\$0.01	2,489	2,560	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	New	864.61	8	\$218.16	10%	12%	\$0.02	6	6	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Gasket Replacement	Service Point	New	0.00	5	\$61.24	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	New	41.63	8	\$13.66	10%	75%	\$0.03	11	11	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	New	357.82	8	\$45.90	9%	75%	\$0.01	48	48	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	New	251.49	10	\$325.08	8%	10%	\$0.10	2	2	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	New	3,306.54	5	\$688.12	53%	60%	\$0.02	92	94	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	New	3,212.53	10	\$2,581.74	15%	30%	\$0.06	283	290	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	New	3,977.80	5	\$512.35	5%	32%	\$0.01	432	433	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	New	567.24	10	\$1,196.74	55%	75%	\$0.16	44	45	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	New	4,691.68	4	\$1,554.65	4%	5%	\$0.03	18	18	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	New	0.00	8	\$125.39	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	New	2,947.53	10	\$748.67	8%	38%	\$0.02	353	356	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	New	3,791.15	5	\$2,797.21	30%	36%	\$0.06	82	85	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	New	264.36	5	\$737.10	15%	18%	\$0.21	3	3	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	New	7,493.45	5	\$4,623.61	55%	62%	\$0.05	196	202	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Scientific Irrigation Practices	Service Point	New	2,209.63	1	\$256.16	43%	75%	\$0.01	279	284	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03

Washington Irrigation Measure Assumptions

Table H-19 Table of Washington Irrigation Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	Existing	320.51	8	\$80.29	10%	12%	\$0.04	46	47	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Gasket Replacement	Service Point	Existing	35.38	5	\$22.54	73%	75%	\$0.15	6	6	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	Existing	74.12	8	\$24.20	10%	75%	\$0.06	384	390	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	Existing	48.47	8	\$6.20	10%	75%	\$0.02	127	127	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	Existing	93.88	10	\$119.64	8%	10%	\$0.18	14	14	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	Existing	1,225.74	5	\$253.25	53%	60%	\$0.05	690	699	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	Existing	1,186.03	10	\$1,583.58	15%	38%	\$0.19	3,136	3,241	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	Existing	1,459.74	5	\$188.56	15%	25%	\$0.03	1,179	1,181	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	Existing	209.13	10	\$440.43	55%	75%	\$0.30	324	339	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	Existing	1,737.17	4	\$572.15	4%	5%	\$0.09	133	135	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	Existing	71.77	8	\$46.15	73%	75%	\$0.11	11	12	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	Existing	1,089.92	10	\$275.53	15%	38%	\$0.04	1,973	1,984	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	Existing	1,415.29	5	\$1,029.45	30%	36%	\$0.17	622	642	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	Existing	97.46	5	\$271.27	15%	18%	\$0.65	19	20	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	Existing	2,797.55	5	\$1,701.61	55%	62%	\$0.14	1,491	1,529	Developed from RTF "AgIrrigationHardware" v3.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Scientific Irrigation Practices	Service Point	Existing	818.12	1	\$94.27	43%	75%	\$0.12	2,082	2,119	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	New	318.43	8	\$80.29	10%	12%	\$0.04	4	4	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Gasket Replacement	Service Point	New	0.00	5	\$22.54	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	New	73.64	8	\$24.20	10%	75%	\$0.06	33	33	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	New	48.30	8	\$6.20	9%	75%	\$0.02	11	11	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	New	90.90	10	\$119.64	8%	10%	\$0.18	1	1	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	New	1,217.69	5	\$253.25	53%	60%	\$0.05	59	59	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	New	1,195.66	10	\$950.15	15%	38%	\$0.12	276	276	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	New	1,457.01	5	\$188.56	15%	25%	\$0.03	100	100	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	New	205.02	10	\$440.43	55%	75%	\$0.30	28	28	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	New	1,722.97	4	\$572.15	4%	5%	\$0.09	11	11	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	New	0.00	8	\$46.15	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	New	1,086.01	10	\$275.53	15%	38%	\$0.04	168	168	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	New	1,371.63	5	\$1,029.45	30%	36%	\$0.17	53	53	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	New	95.50	5	\$271.27	15%	18%	\$0.65	2	2	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	New	2,717.47	5	\$1,701.61	55%	62%	\$0.15	125	125	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Scientific Irrigation Practices	Service Point	New	797.23	1	\$94.27	43%	75%	\$0.12	175	175	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03

Wyoming Irrigation Measure Assumptions

Table H-20 Table of Wyoming Irrigation Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	Existing	443.56	8	\$111.70	10%	12%	\$0.04	7	7	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Gasket Replacement	Service Point	Existing	49.01	5	\$31.36	73%	75%	\$0.15	1	1	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	Existing	39.62	8	\$13.03	10%	75%	\$0.06	21	22	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	Existing	157.53	8	\$20.13	10%	75%	\$0.02	43	43	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	Existing	130.05	10	\$166.44	8%	10%	\$0.18	2	2	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	Existing	1,696.32	5	\$352.32	53%	60%	\$0.05	98	100	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	Existing	1,635.93	10	\$2,203.09	15%	30%	\$0.19	296	309	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	Existing	2,040.65	5	\$262.33	5%	32%	\$0.03	459	460	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	Existing	290.92	10	\$612.73	55%	75%	\$0.30	46	49	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	Existing	2,406.30	4	\$795.98	4%	5%	\$0.09	19	19	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	Existing	99.41	8	\$64.20	73%	75%	\$0.11	2	2	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	Existing	1,512.13	10	\$383.32	8%	38%	\$0.04	375	380	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	Existing	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	Existing	1,960.53	5	\$1,432.17	30%	36%	\$0.17	88	92	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	Existing	135.58	5	\$377.40	15%	18%	\$0.64	3	3	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	Existing	3,875.23	5	\$2,367.30	55%	62%	\$0.14	212	219	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Scientific Irrigation Practices	Service Point	Existing	1,133.24	1	\$131.15	43%	75%	\$0.11	296	304	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03
Irrigation	Motors	Center Pivot Base Boot Gasket	Service Point	New	438.24	8	\$111.70	10%	12%	\$0.04	1	1	Developed from RTF "AgIrrigationHardware" v3.0

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Irrigation	Motors	Gasket Replacement	Service Point	New	0.00	5	\$31.36	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Green Motor Rewind (<100 HP)	Service Point	New	39.21	8	\$13.03	10%	75%	\$0.06	2	2	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Green Motor Rewind (100 HP+)	Service Point	New	156.94	8	\$20.13	9%	75%	\$0.02	4	4	Developed from RTF "AgIndGreenMotorRewind" v2.0
Irrigation	Motors	Hub Replacement	Service Point	New	126.00	10	\$166.44	8%	10%	\$0.18	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Low Pressure Regulators	Service Point	New	1,675.87	5	\$352.32	53%	60%	\$0.05	8	8	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Motors - Variable Frequency Drive	Service Point	New	1,622.34	10	\$1,321.85	15%	30%	\$0.12	26	26	AEG research & analysis
Irrigation	Motors	Multiple Configuration Nozzle	Service Point	New	2,033.65	5	\$262.33	5%	32%	\$0.03	39	39	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	New Goose Necks	Service Point	New	284.19	10	\$612.73	55%	75%	\$0.30	4	4	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Nozzle Replacement - Flow-Control Type	Service Point	New	2,374.27	4	\$795.98	4%	5%	\$0.09	2	2	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Other Motors - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pipe Repair	Service Point	New	0.00	8	\$64.20	75%	75%	\$10.00	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Pump Equipment Upgrade	Service Point	New	1,499.89	10	\$383.32	8%	38%	\$0.04	32	32	6th Plan "Industrial_tool_111209"
Irrigation	Motors	Pumps (< 100 HP) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Pumps (100 HP+) - Standard NEMA Premium	Service Point	New	0.00	15	\$0.00	100%	at stock turnover	\$10.00	0	0	CA DEER 2008
Irrigation	Motors	Rebuilt or New Brass Impact Sprinklers	Service Point	New	1,901.28	5	\$1,432.17	30%	36%	\$0.17	8	8	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rebuilt or New Wheel Line Levelers	Service Point	New	132.38	5	\$377.40	15%	18%	\$0.65	0	0	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Rotating-type or Low-Pressure Pivot Sprinklers	Service Point	New	3,766.80	5	\$2,367.30	55%	62%	\$0.14	18	18	Developed from RTF "AgIrrigationHardware" v3.0
Irrigation	Motors	Scientific Irrigation Practices	Service Point	New	1,117.98	1	\$131.15	43%	75%	\$0.12	26	26	Developed from RTF "Scientific Irrigation Scheduling Provisional Standard Protocol" v03

Street Lighting Measures

California Street Lighting Measure Assumptions

Table H-21 Table of California Street Lighting Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	220.77	20	\$199.83	100%	at stock turnover	\$0.09	88	90	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	101.58	15	\$150.00	0%	40%	\$0.16	29	34	AEG research & analysis
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	New	220.77	20	\$199.83	100%	at stock turnover	\$0.09	11	11	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	96.00	15	\$150.00	0%	40%	\$0.16	3	3	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	469.35	20	\$204.68	100%	at stock turnover	\$0.05	38	39	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	232.73	15	\$150.00	0%	40%	\$0.07	14	16	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	New	469.35	20	\$204.68	100%	at stock turnover	\$0.05	5	5	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	220.85	15	\$150.00	0%	40%	\$0.07	1	2	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	578.99	20	\$502.16	100%	at stock turnover	\$0.09	0	0	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	291.59	15	\$150.00	0%	40%	\$0.06	0	0	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	New	578.99	20	\$502.16	100%	at stock turnover	\$0.09	0	0	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	276.93	15	\$150.00	0%	40%	\$0.06	0	0	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	1,082.46	20	\$602.95	100%	at stock turnover	\$0.06	1	1	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	460.32	15	\$150.00	0%	40%	\$0.04	0	0	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	New	1,082.46	20	\$602.95	100%	at stock turnover	\$0.06	0	0	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	432.92	15	\$150.00	0%	40%	\$0.04	0	0	AEG research & analysis
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	246.85	20	\$199.83	100%	at stock turnover	\$0.08	184	191	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	107.00	15	\$150.00	0%	40%	\$0.15	38	48	AEG research & analysis
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	New	246.85	20	\$199.83	100%	at stock turnover	\$0.08	23	23	PacifiCorp Research

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	94.01	15	\$150.00	0%	40%	\$0.15	4	4	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	445.67	20	\$204.68	100%	at stock turnover	\$0.05	124	128	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	209.10	15	\$150.00	0%	40%	\$0.08	28	34	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	New	445.67	20	\$204.68	100%	at stock turnover	\$0.05	16	16	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	185.64	15	\$150.00	0%	40%	\$0.08	3	3	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	692.82	20	\$502.16	100%	at stock turnover	\$0.08	104	108	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	330.45	15	\$150.00	0%	40%	\$0.05	24	30	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	New	692.82	20	\$502.16	100%	at stock turnover	\$0.08	13	13	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	293.97	15	\$150.00	0%	40%	\$0.05	3	3	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	1,148.52	20	\$602.95	100%	at stock turnover	\$0.05	28	29	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	457.80	15	\$150.00	0%	40%	\$0.03	5	7	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	New	1,148.52	20	\$602.95	100%	at stock turnover	\$0.05	4	4	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	397.34	15	\$150.00	0%	40%	\$0.03	1	1	AEG research & analysis

Idaho Street Lighting Measure Assumptions

Table H-22 Table of Idaho Street Lighting Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	210.97	20	\$199.83	100%	at stock turnover	-\$0.05	11	12	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	96.24	15	\$150.00	0%	40%	\$0.11	4	4	AEG research & analysis
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	New	210.97	20	\$199.83	100%	at stock turnover	-\$0.05	1	1	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	91.13	15	\$150.00	0%	40%	\$0.17	0	0	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	301.63	20	\$204.68	100%	at stock turnover	-\$0.03	1	1	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	148.38	15	\$150.00	0%	40%	\$0.11	0	0	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	New	301.63	20	\$204.68	100%	at stock turnover	-\$0.03	0	0	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	141.07	15	\$150.00	0%	40%	\$0.11	0	0	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	495.53	20	\$502.16	100%	at stock turnover	\$0.05	4	4	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	247.61	15	\$150.00	0%	40%	\$0.07	1	1	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	New	495.53	20	\$502.16	100%	at stock turnover	\$0.05	0	0	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	235.60	15	\$150.00	0%	40%	\$0.07	0	0	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	926.42	20	\$602.95	100%	at stock turnover	\$0.04	2	3	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	390.32	15	\$150.00	0%	40%	\$0.04	1	1	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	New	926.42	20	\$602.95	100%	at stock turnover	\$0.04	0	0	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	367.87	15	\$150.00	0%	40%	\$0.04	0	0	AEG research & analysis
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	218.73	20	\$199.83	100%	at stock turnover	-\$0.05	507	510	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	91.15	15	\$150.00	0%	40%	\$0.17	101	124	AEG research & analysis
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	New	218.73	20	\$199.83	100%	at stock turnover	-\$0.05	54	54	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	81.14	15	\$150.00	0%	40%	\$0.17	9	10	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	331.84	20	\$204.68	100%	at stock turnover	-\$0.03	55	55	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	150.13	15	\$150.00	0%	40%	\$0.10	12	15	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	New	331.84	20	\$204.68	100%	at stock turnover	-\$0.03	6	6	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	134.96	15	\$150.00	0%	40%	\$0.10	1	1	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	544.98	20	\$502.16	100%	at stock turnover	\$0.05	172	172	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	250.80	15	\$150.00	0%	40%	\$0.06	39	46	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	New	544.98	20	\$502.16	100%	at stock turnover	\$0.05	18	18	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	225.87	15	\$150.00	0%	40%	\$0.06	3	4	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	1,022.93	20	\$602.95	100%	at stock turnover	\$0.03	171	172	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	390.59	15	\$150.00	0%	40%	\$0.04	31	38	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	New	1,022.93	20	\$602.95	100%	at stock turnover	\$0.03	18	18	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	343.80	15	\$150.00	0%	40%	\$0.04	3	3	AEG research & analysis
Other	Street Lighting	150W Fixture HPS - HPS	Fixture	Existing	0.00	20	\$0.00	100%	at stock turnover	\$10.00	0	0	PacifiCorp Research
Other	Street Lighting	Smart Dimming Controller	Fixture	Existing	156.26	15	\$150.00	0%	40%	\$0.11	17	17	AEG research & analysis
Other	Street Lighting	150W Fixture - HPS	Fixture	New	0.00	20	\$0.00	100%	at stock turnover	\$10.00	0	0	PacifiCorp Research
Other	Street Lighting	Smart Dimming Controller	Fixture	New	156.26	15	\$150.00	0%	40%	\$0.11	2	2	AEG research & analysis

Utah Street Lighting Measure Assumptions

Table H-23 Table of Utah Street Lighting Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	233.76	20	\$199.83	100%	at stock turnover	\$0.09	1,811	1,864	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	107.27	15	\$150.00	0%	40%	\$0.13	583	690	AEG research & analysis
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	New	233.76	20	\$199.83	100%	at stock turnover	\$0.09	222	222	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	101.64	15	\$150.00	0%	40%	\$0.13	62	69	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	357.14	20	\$204.68	100%	at stock turnover	\$0.06	369	380	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	176.64	15	\$150.00	0%	40%	\$0.08	130	152	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	New	357.14	20	\$204.68	100%	at stock turnover	\$0.06	45	45	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	168.04	15	\$150.00	0%	40%	\$0.08	14	15	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	560.53	20	\$502.16	100%	at stock turnover	\$0.09	463	476	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	281.59	15	\$150.00	0%	40%	\$0.05	166	193	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	New	560.53	20	\$502.16	100%	at stock turnover	\$0.09	57	57	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	268.09	15	\$150.00	0%	40%	\$0.05	18	19	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	1,048.12	20	\$602.95	100%	at stock turnover	\$0.06	375	386	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	444.41	15	\$150.00	0%	40%	\$0.03	110	132	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	New	1,048.12	20	\$602.95	100%	at stock turnover	\$0.06	46	46	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	419.17	15	\$150.00	0%	40%	\$0.03	12	13	AEG research & analysis
Customer - 1000W	Street Lighting	1000W Fixture - LED	Fixture	Existing	2,684.97	20	\$1,044.83	100%	at stock turnover	\$0.03	922	956	PacifiCorp Research
Customer - 1000W	Street Lighting	Smart Dimming Controller	Fixture	Existing	1,039.26	15	\$150.00	0%	40%	\$0.01	172	219	AEG research & analysis
Customer - 1000W	Street Lighting	1000W Fixture - LED	Fixture	New	2,684.97	20	\$1,044.83	100%	at stock turnover	\$0.03	114	114	PacifiCorp Research
Customer - 1000W	Street Lighting	Smart Dimming Controller	Fixture	New	911.25	15	\$150.00	0%	40%	\$0.01	18	20	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	217.24	20	\$199.83	100%	at stock turnover	\$0.07	3,294	3,414	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	91.66	15	\$150.00	0%	40%	\$0.11	684	851	AEG research & analysis
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	New	217.24	20	\$199.83	100%	at stock turnover	\$0.07	408	409	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	81.31	15	\$150.00	0%	40%	\$0.11	71	77	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	355.40	20	\$204.68	100%	at stock turnover	\$0.05	3,298	3,418	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	162.65	15	\$150.00	0%	40%	\$0.06	757	924	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	New	355.40	20	\$204.68	100%	at stock turnover	\$0.05	409	409	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	145.71	15	\$150.00	0%	40%	\$0.06	79	85	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	577.08	20	\$502.16	100%	at stock turnover	\$0.07	2,289	2,372	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	268.59	15	\$150.00	0%	40%	\$0.04	536	652	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	New	577.08	20	\$502.16	100%	at stock turnover	\$0.07	284	284	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	241.07	15	\$150.00	0%	40%	\$0.04	56	61	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	1,074.06	20	\$602.95	100%	at stock turnover	\$0.04	4,772	4,946	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	415.73	15	\$150.00	0%	40%	\$0.02	890	1,132	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	New	1,074.06	20	\$602.95	100%	at stock turnover	\$0.04	591	592	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	364.52	15	\$150.00	0%	40%	\$0.02	91	101	AEG research & analysis
Other	Street Lighting	150W Fixture HPS - HPS	Fixture	Existing	0.00	20	\$0.00	100%	at stock turnover	\$10.00	0	0	PacifiCorp Research
Other	Street Lighting	Smart Dimming Controller	Fixture	Existing	159.97	15	\$150.00	0%	40%	\$0.07	364	364	AEG research & analysis
Other	Street Lighting	150W Fixture - HPS	Fixture	New	0.00	20	\$0.00	100%	at stock turnover	\$10.00	0	0	PacifiCorp Research
Other	Street Lighting	Smart Dimming Controller	Fixture	New	159.97	15	\$150.00	0%	40%	\$0.07	40	40	AEG research & analysis

Washington Street Lighting Measure Assumptions

Table H-24 Table of Washington Street Lighting Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	236.19	20	\$199.83	100%	at stock turnover	-\$0.04	234	241	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	108.39	15	\$150.00	0%	40%	\$0.15	75	89	AEG research & analysis
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	New	236.19	20	\$199.83	100%	at stock turnover	-\$0.04	29	29	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	102.69	15	\$150.00	0%	40%	\$0.15	6	7	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	474.12	20	\$204.68	100%	at stock turnover	-\$0.02	564	580	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	234.52	15	\$150.00	0%	40%	\$0.07	198	232	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	New	474.12	20	\$204.68	100%	at stock turnover	-\$0.02	69	69	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	223.08	15	\$150.00	0%	40%	\$0.07	16	19	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	626.29	20	\$502.16	100%	at stock turnover	\$0.04	30	31	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	314.65	15	\$150.00	0%	40%	\$0.05	11	13	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	New	626.29	20	\$502.16	100%	at stock turnover	\$0.04	4	4	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	299.54	15	\$150.00	0%	40%	\$0.05	1	1	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	1,166.98	20	\$602.95	100%	at stock turnover	\$0.03	201	207	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	494.85	15	\$150.00	0%	40%	\$0.03	59	71	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	New	1,166.98	20	\$602.95	100%	at stock turnover	\$0.03	25	25	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	466.68	15	\$150.00	0%	40%	\$0.03	5	6	AEG research & analysis
Customer - 1000W	Street Lighting	1000W Fixture - LED	Fixture	Existing	2,880.84	20	\$1,044.83	100%	at stock turnover	\$0.03	48	49	PacifiCorp Research
Customer - 1000W	Street Lighting	Smart Dimming Controller	Fixture	Existing	1,137.92	15	\$150.00	0%	40%	\$0.01	9	11	AEG research & analysis
Customer - 1000W	Street Lighting	1000W Fixture - LED	Fixture	New	2,880.84	20	\$1,044.83	100%	at stock turnover	\$0.03	6	6	PacifiCorp Research
Customer - 1000W	Street Lighting	Smart Dimming Controller	Fixture	New	994.00	15	\$150.00	0%	40%	\$0.01	1	1	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	243.92	20	\$199.83	100%	at stock turnover	-\$0.04	161	167	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	104.86	15	\$150.00	0%	40%	\$0.15	32	41	AEG research & analysis
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	New	243.92	20	\$199.83	100%	at stock turnover	-\$0.04	20	20	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	92.67	15	\$150.00	0%	40%	\$0.15	3	3	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	490.24	20	\$204.68	100%	at stock turnover	-\$0.02	417	432	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	228.25	15	\$150.00	0%	40%	\$0.07	92	114	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	New	490.24	20	\$204.68	100%	at stock turnover	-\$0.02	52	52	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	203.76	15	\$150.00	0%	40%	\$0.07	7	8	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	686.14	20	\$502.16	100%	at stock turnover	\$0.04	267	276	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	324.79	15	\$150.00	0%	40%	\$0.05	60	74	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	New	686.14	20	\$502.16	100%	at stock turnover	\$0.04	33	33	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	290.51	15	\$150.00	0%	40%	\$0.05	5	6	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	1,170.34	20	\$602.95	100%	at stock turnover	\$0.03	176	182	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	462.28	15	\$150.00	0%	40%	\$0.03	32	41	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	New	1,170.34	20	\$602.95	100%	at stock turnover	\$0.03	22	22	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	403.81	15	\$150.00	0%	40%	\$0.03	2	3	AEG research & analysis

Wyoming Street Lighting Measure Assumptions

Table H-25 Table of Wyoming Street Lighting Measure Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Company - 1000W	Street Lighting	1000W Fixture - LED	Fixture	Existing	2,280.25	20	\$1,044.83	100%	at stock turnover	\$0.05	1	1	PacifiCorp Research
Company - 1000W	Street Lighting	Smart Dimming Controller	Fixture	Existing	1,047.33	15	\$150.00	0%	40%	\$0.02	0	0	AEG research & analysis
Company - 1000W	Street Lighting	1000W Fixture - LED	Fixture	New	2,280.25	20	\$1,044.83	100%	at stock turnover	\$0.05	0	0	PacifiCorp Research
Company - 1000W	Street Lighting	Smart Dimming Controller	Fixture	New	991.76	15	\$150.00	0%	40%	\$0.02	0	0	AEG research & analysis
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	213.38	20	\$199.83	100%	at stock turnover	\$0.10	555	570	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	98.01	15	\$150.00	0%	40%	\$0.17	179	212	AEG research & analysis
Company - 100W	Street Lighting	100W Fixture - LED	Fixture	New	213.38	20	\$199.83	100%	at stock turnover	\$0.10	68	68	PacifiCorp Research
Company - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	92.81	15	\$150.00	0%	40%	\$0.17	19	22	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	386.70	20	\$204.68	100%	at stock turnover	\$0.06	963	991	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	191.43	15	\$150.00	0%	40%	\$0.09	340	397	AEG research & analysis
Company - 150W	Street Lighting	150W Fixture - LED	Fixture	New	386.70	20	\$204.68	100%	at stock turnover	\$0.06	119	119	PacifiCorp Research
Company - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	182.00	15	\$150.00	0%	40%	\$0.09	36	42	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	524.46	20	\$502.16	100%	at stock turnover	\$0.10	114	117	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	263.69	15	\$150.00	0%	40%	\$0.06	41	48	AEG research & analysis
Company - 250W	Street Lighting	250W Fixture - LED	Fixture	New	524.46	20	\$502.16	100%	at stock turnover	\$0.10	14	14	PacifiCorp Research
Company - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	250.91	15	\$150.00	0%	40%	\$0.06	4	5	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	980.51	20	\$602.95	100%	at stock turnover	\$0.06	244	250	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	416.15	15	\$150.00	0%	40%	\$0.04	72	86	AEG research & analysis
Company - 400W	Street Lighting	400W Fixture - LED	Fixture	New	980.51	20	\$602.95	100%	at stock turnover	\$0.06	30	30	PacifiCorp Research
Company - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	392.25	15	\$150.00	0%	40%	\$0.04	8	9	AEG research & analysis

Measure Data and Assumptions

Segment	End Use	Measure Name	Unit Definition	Construct. Vintage	Average Savings per Unit (Annual kWh @meter)	Measure Life (Years)	Average Incremental Cost (\$/Unit)	Base Year Saturation	Applicability	Levelized Cost (\$/kWh 2015-2034)	Cumulative Achievable Tech. Potential in 2034 (MWh @gen)	20-Year Incremental Achievable Tech. Potential (MWh @gen)	Savings Source
Customer - 1000W	Street Lighting	1000W Fixture - LED	Fixture	Existing	2,908.95	20	\$1,044.83	100%	at stock turnover	\$0.04	5	5	PacifiCorp Research
Customer - 1000W	Street Lighting	Smart Dimming Controller	Fixture	Existing	1,228.28	15	\$150.00	0%	40%	\$0.01	1	1	AEG research & analysis
Customer - 1000W	Street Lighting	1000W Fixture - LED	Fixture	New	2,908.95	20	\$1,044.83	100%	at stock turnover	\$0.04	1	1	PacifiCorp Research
Customer - 1000W	Street Lighting	Smart Dimming Controller	Fixture	New	1,086.71	15	\$150.00	0%	40%	\$0.01	0	0	AEG research & analysis
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	Existing	207.26	20	\$199.83	100%	at stock turnover	\$0.10	5	5	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	Existing	87.62	15	\$150.00	0%	40%	\$0.18	1	1	AEG research & analysis
Customer - 100W	Street Lighting	100W Fixture - LED	Fixture	New	207.26	20	\$199.83	100%	at stock turnover	\$0.10	1	1	PacifiCorp Research
Customer - 100W	Street Lighting	Smart Dimming Controller	Fixture	New	77.62	15	\$150.00	0%	40%	\$0.18	0	0	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	Existing	471.07	20	\$204.68	100%	at stock turnover	\$0.05	29	30	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	Existing	215.96	15	\$150.00	0%	40%	\$0.07	7	8	AEG research & analysis
Customer - 150W	Street Lighting	150W Fixture - LED	Fixture	New	471.07	20	\$204.68	100%	at stock turnover	\$0.05	4	4	PacifiCorp Research
Customer - 150W	Street Lighting	Smart Dimming Controller	Fixture	New	193.25	15	\$150.00	0%	40%	\$0.07	1	1	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	Existing	667.69	20	\$502.16	100%	at stock turnover	\$0.08	60	63	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	Existing	311.29	15	\$150.00	0%	40%	\$0.05	14	17	AEG research & analysis
Customer - 250W	Street Lighting	250W Fixture - LED	Fixture	New	667.69	20	\$502.16	100%	at stock turnover	\$0.08	8	8	PacifiCorp Research
Customer - 250W	Street Lighting	Smart Dimming Controller	Fixture	New	279.09	15	\$150.00	0%	40%	\$0.05	1	2	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	Existing	1,253.26	20	\$602.95	100%	at stock turnover	\$0.05	236	244	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	Existing	486.08	15	\$150.00	0%	40%	\$0.03	44	56	AEG research & analysis
Customer - 400W	Street Lighting	400W Fixture - LED	Fixture	New	1,253.26	20	\$602.95	100%	at stock turnover	\$0.05	29	29	PacifiCorp Research
Customer - 400W	Street Lighting	Smart Dimming Controller	Fixture	New	425.65	15	\$150.00	0%	40%	\$0.03	5	5	AEG research & analysis
Other	Street Lighting	150W Fixture HPS - HPS	Fixture	Existing	0.00	20	\$0.00	100%	at stock turnover	\$10.00	0	0	PacifiCorp Research
Other	Street Lighting	Smart Dimming Controller	Fixture	Existing	189.14	15	\$150.00	0%	40%	\$0.09	7	7	AEG research & analysis
Other	Street Lighting	150W Fixture - HPS	Fixture	New	0.00	20	\$0.00	100%	at stock turnover	\$10.00	0	0	PacifiCorp Research
Other	Street Lighting	Smart Dimming Controller	Fixture	New	189.14	15	\$150.00	0%	40%	\$0.09	1	1	AEG research & analysis

About Applied Energy Group (AEG)

Founded in 1982, AEG is a multi-disciplinary technical, economic and management consulting firm that offers a comprehensive suite of demand-side management (DSM) services designed to address the evolving needs of utilities, government bodies, and grid operators worldwide. Hundreds of such clients have leveraged our people, our technology, and our proven processes to make their energy efficiency (EE), demand response (DR), and distributed generation (DG) initiatives a success. Clients trust AEG to work with them at every stage of the DSM program lifecycle – assessing market potential, designing effective programs, supporting the implementation of the programs, and evaluating program results.

The AEG team has decades of combined experience in the utility DSM industry. We provide expertise, insight and analysis to support a broad range of utility DSM activities, including: potential assessments; end-use forecasts; integrated resource planning; EE, DR, DG, and smart grid pilot and program design and administration; load research; technology assessments and demonstrations; project reviews; program evaluations; and regulatory support.

Our consulting engagements are managed and delivered by a seasoned, interdisciplinary team comprised of analysts, engineers, economists, business planners, project managers, market researchers, load research professionals, and statisticians. Clients view AEG's experts as trusted advisors, and we work together collaboratively to make any DSM initiative a success.